VoIP V2 Speaker
Operations Guide

Part #011098*, RAL 9002, Gray White, Standard
Part #011099, RAL 9003, Signal White, Optional
*Replaces #011021

Document Part #*930274H*
for Firmware Version *5.1.0*

CyberData Corporation
2555 Garden Road
Monterey, CA 93940
(831) 373-2601

VoIP V2 Speaker Operations Guide 930274H
Part # 011098*
Part # 011099
***Replaces 011021**

COPYRIGHT NOTICE:
© 2010, CyberData Corporation, ALL RIGHTS RESERVED.

This manual and related materials are the copyrighted property of CyberData Corporation. No part of this manual or related materials may be reproduced or transmitted, in any form or by any means (except for internal use by licensed customers), without prior express written permission of CyberData Corporation. This manual, and the products, software, firmware, and/or hardware described in this manual are the property of CyberData Corporation, provided under the terms of an agreement between CyberData Corporation and recipient of this manual, and their use is subject to that agreement and its terms.

DISCLAIMER: Except as expressly and specifically stated in a written agreement executed by CyberData Corporation, CyberData Corporation makes no representation or warranty, express or implied, including any warranty or merchantability or fitness for any purpose, with respect to this manual or the products, software, firmware, and/or hardware described herein, and CyberData Corporation assumes no liability for damages or claims resulting from any use of this manual or such products, software, firmware, and/or hardware. CyberData Corporation reserves the right to make changes, without notice, to this manual and to any such product, software, firmware, and/or hardware.

OPEN SOURCE STATEMENT: Certain software components included in CyberData products are subject to the GNU General Public License (GPL) and Lesser GNU General Public License (LGPL) "open source" or "free software" licenses. Some of this Open Source Software may be owned by third parties. Open Source Software is not subject to the terms and conditions of the CyberData COPYRIGHT NOTICE or software licenses. Your right to copy, modify, and distribute any Open Source Software is determined by the terms of the GPL, LGPL, or third party, according to who licenses that software.

Software or firmware developed by CyberData that is unrelated to Open Source Software is copyrighted by CyberData, subject to the terms of CyberData licenses, and may not be copied, modified, reverse-engineered, or otherwise altered without explicit written permission from CyberData Corporation.

TRADEMARK NOTICE: CyberData Corporation and the CyberData Corporation logos are trademarks of CyberData Corporation. Other product names, trademarks, and service marks may be the trademarks or registered trademarks of their respective owners.

Phone: (831) 373-2601
Technical Support Ext. 333
support@cyberdata.net
Fax: (831) 373-4193
Company and product information at www.cyberdata.net

Revision Information

Revision 930274H was updated on 9-2-2010 and has the following changes:

- Updates Figure 1-4, "Dimensions" .

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. Prior to installation, consult local building and electrical code requirements.

Warning

Electrical Hazard: This product should be installed by a licensed electrician according to all local electrical and building codes.

Warning

Electrical Hazard: To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

Pictorial Alert Icons

	General Alert *This pictoral alert indicates a potentially hazardous situation. This alert will be followed by a hazard level heading and more specific information about the hazard.*
	Ground *This pictoral alert indicates the Earth grounding connection point.*

Hazard Levels

Danger: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This is limited to the most extreme situations.

Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution: Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also alert users against unsafe practices.

Notice: Indicates a statement of company policy (that is, a safety policy or protection of property).

The safety guidelines for the equipment in this manual do not purport to address all the safety issues of the equipment. It is the responsibility of the user to establish appropriate safety, ergonomic, and health practices and determine the applicability of regulatory limitations prior to use. Potential safety hazards are identified in this manual through the use of words Danger, Warning, and Caution, the specific hazard type, and pictorial alert icons.

Abbreviations and Terms

Abbreviation or Term	Definition
A-law	A standard companding algorithm, used in European digital communications systems to optimize, i.e., modify, the dynamic range of an analog signal for digitizing.
AVP	Audio Video Profile
Cat 5	TIA/EIA-568-B Category 5
DHCP	Dynamic Host Configuration Protocol
LAN	Local Area Network
LED	Light Emitting Diode
Mbps	Megabytes per Second.
NTP	Network Time Protocol
PBX	Private Branch Exchange
PoE	Power over Ethernet (as per IEEE 802.3af standard)
RTP	Real-time Transport Protocol
RTFM	Reset Test Function Management
SIP	Session Initiated Protocol
TFTP	Trivial File Transfer Protocol
u-law	A companding algorithm, primarily used in the digital telecommunication
UC	Unified Communications
VoIP	Voice over Internet Protocol

Contents

Chapter 1 Product Overview 1

1.1 How to Identify This Product 2
1.2 Installation 3
1.3 Product Features 3
1.4 Supported Protocols 4
1.5 Supported SIP Servers 4
1.6 Product Specifications 5
1.7 Optional Connections (J9 and J10) 6
1.8 Dimensions 6

Chapter 2 Installing the VoIP V2 Speaker 7

2.1 Parts List 7
2.2 Device Configuration 8
2.2.1 Connect Power to the Speaker 9
2.2.2 Installation Options 13
2.2.3 Confirm that the Speaker is Operational and Linked to the Network 17
2.2.4 Confirm the IP Address, Test the Audio, and Check the Volume 18
2.2.5 Adjust the Volume 19
2.2.6 How to Set the Factory Default Settings 20
2.3 Configure the Speaker Parameters 21
2.3.1 V2 Speaker Web Page Navigation 22
2.3.2 Log in to the Configuration Home Page 23
2.3.3 Configure the Device Parameters 26
2.3.4 Configure the Network Parameters 29
2.3.5 Configure the SIP Parameters 31
2.3.6 Configure the Night Ringer Parameters 35
2.3.7 Configure the Multicast Parameters 37
2.3.8 Configure the Audio Parameters 41
2.3.9 Configure the NTP Server and Clock Parameters 46
2.3.10 Configure the Event Parameters 50
2.3.11 Configure the Autoprovisioning Parameters 55
2.3.12 Upgrade the Firmware and Reboot the V2 Speaker 60

Appendix A Mounting the Speaker 64

A.1 Mount the Speaker 64

Appendix B Setting up a TFTP Server 67

B.1 Set up a TFTP Server 67
B.1.1 In a LINUX Environment 67
B.1.2 In a Windows Environment 67

Appendix C Troubleshooting/Technical Support 68

C.1 Frequently Asked Questions (FAQ) 68
C.2 Documentation 68
C.3 Contact Information 68
C.4 Warranty 69
C.4.1 Warranty & RMA Returns within the United States 69
C.4.2 Warranty & RMA Returns Outside of the United States 69
C.4.3 Spare in the Air Policy 70
C.4.4 Return and Restocking Policy 70
C.4.5 Warranty and RMA Returns Page 70

Index 71

1 Product Overview

The CyberData SIP-enabled V2 Speaker is a Power-over-Ethernet (PoE 802.3af) and Voice-over-IP (VoIP) public address two-way loudspeaker that easily connects into existing local area networks with a single CAT5 cable connection. The speaker is compatible with most SIP-based IP PBX. In a non-SIP environment, the speaker is capable of broadcasting audio through multicast. Its small footprint and low height allows the speaker to be discretely mounted almost anywhere.

The CyberData V2 Speaker is an innovative addition to our portfolio of paging/notification products. As an example, in an open-room setting, the CyberData V2 Speaker with its adaptive full-duplex voice operation allows for clear two-way communication during event notifications.

Note Prior to installation, create a plan for the locations of your speakers.

General Alert

Consult local building and electrical code requirements prior to installation.

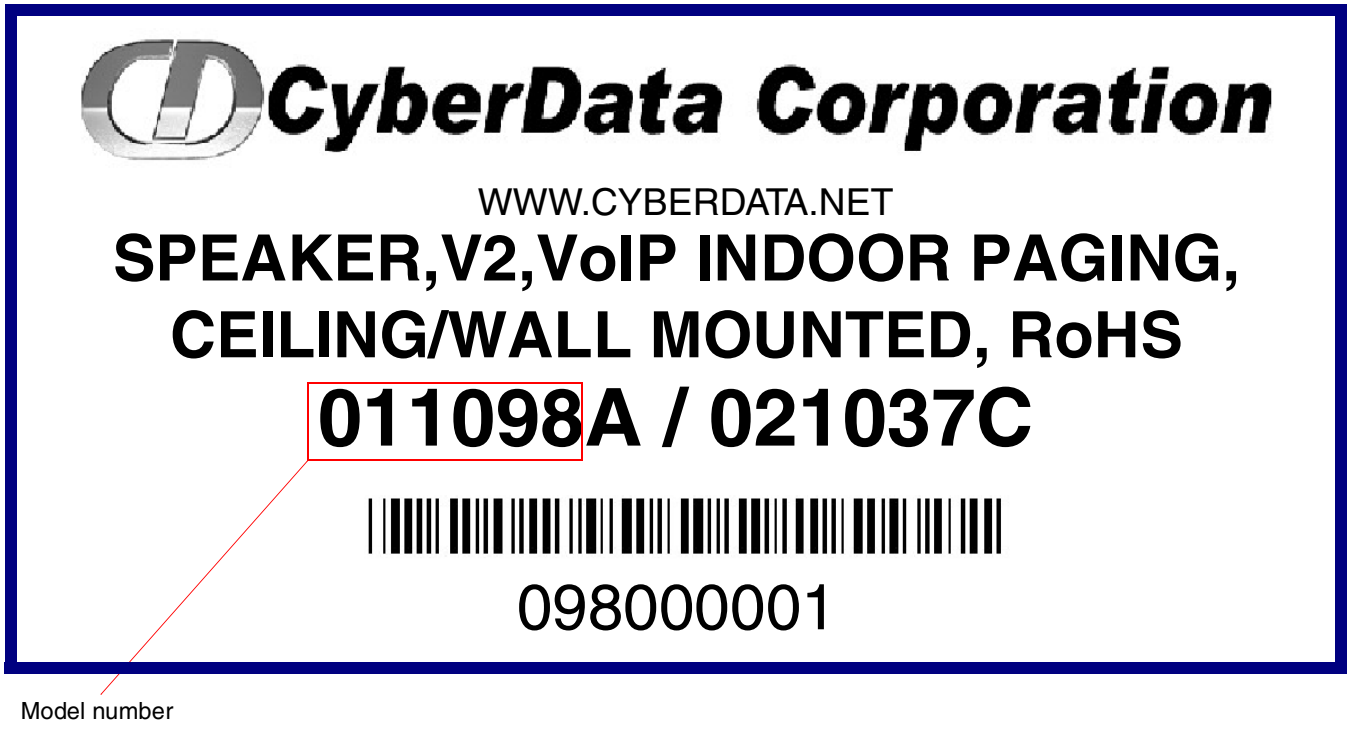
1.1 How to Identify This Product

To identify the VoIP V2 Speaker, look for a model number label similar to the one shown in Figure 1-1. The model number on the label should be one of the following:

- **011098***, RAL 9002, Gray White, Standard Color
- **011099**, RAL 9003, Signal White, Optional Color

*Replaces **011021**.

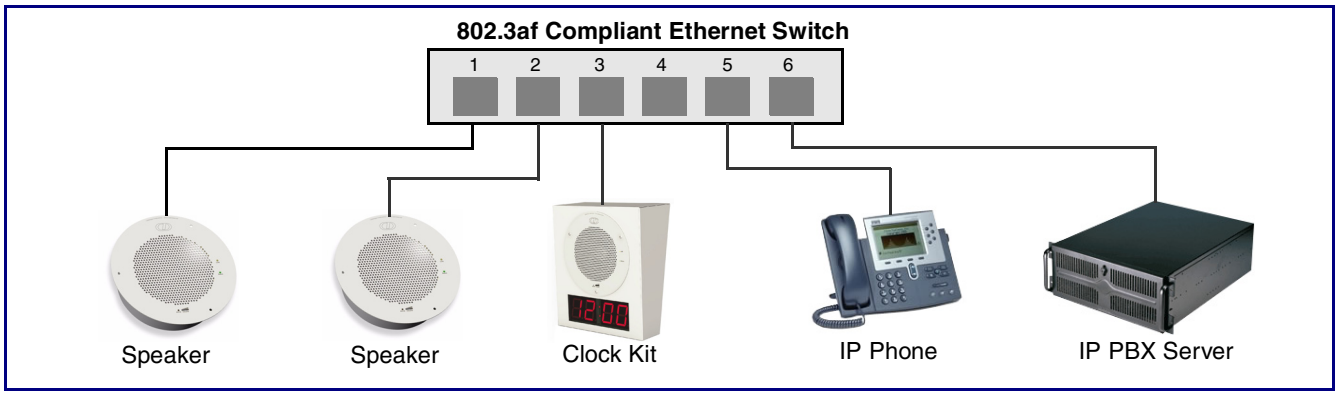
Figure 1-1. Model Number Label



1.2 Installation

Figure 1-2 illustrates a typical configurations for the VoIP V2 Speaker.

Figure 1-2. Typical Installation



See the following sections for other installation options:

- Section 2.2.1.3, "Running the V2 Speaker with Auxiliary Power"
- Section 2.2.2.1, "V2 Speaker with an External Device"
- Section 2.2.2.2, "V2 Speaker with Auxiliary Speaker Connection"
- Section 2.2.2.3, "V2 Speaker with Line Out"

1.3 Product Features

- SIP (RFC 3261) compatible
- Web-based configuration
- Web-based firmware upgradeable
- Autoprovisioning support
- Small footprint
- High efficiency speaker driver
- PoE 802.3af Enabled (Powered-over-Ethernet)
- Network and external speaker volume control
- Peer-to-peer capability
- User-uploadable ring and alert tones
- Auto detect for CyberData Clock kit
- Nightringer
- Buffered page

1.4 Supported Protocols

The V2 Speaker supports:

- SIP
- Multicast
- HTTP Web-based configuration

  Provides an intuitive user interface for easy system configuration and verification of speaker operations.
- DHCP Client

  Dynamically assigns IP addresses in addition to the option to use static addressing.
- HTTP TCP Post auto-updating event notification in XML format
- TFTP Client

  Facilitates Web-based firmware upgrades of the latest speaker capabilities.
- RTP
- Audio Encodings

  PCMU (G.711 mu-law)

  PCMA (G.711 A-law)

  Packet Time 20 ms

1.5 Supported SIP Servers

The following link contains information on how to configure the speaker for the supported SIP servers:

http://www.cyberdata.net/support/server/index.html

1.6 Product Specifications

Table 1-1. Product Specifications

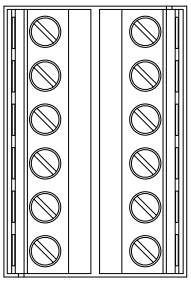
Category	Specification
Audio sensitivity	96dB/1W/1M S.P. Level
Audio output	10 Watts Peak Power
Operating temperature	-30 to 55 C (-22 to 131 F)
Ethernet port baud rate	10/100 Mbps
Protocol	SIP RFC 3261 Compatible
Power Input (J1)	PoE 802.3af (as per IEEE 802.3af standard from a UL-listed, LPS-rated limited power source)
	44-57 VDC (48 VDC nominal) at 350mA
or Auxiliary Power Input[a] (Terminal Block J10)	12 VDC at 1A (from a UL-listed, LPS-rated power supply)
Payload types	G711, A-law and µ-law
Regulatory compliance	FCC Class B, CE
Warranty	2 years limited
Dimensions	9” x 2.4”
Weight	2.8 lbs./shipping weight of 3.8 lbs.
	(1.3 kg/shipping weight of 1.7 kg)
Part number	**011098***, RAL 9002, Gray White, Standard Color
	011099, RAL 9003, Signal White, Optional Color
	*Replaces 011021.

a.Auxiliary power input for use when PoE power is not available. 12 VDC @ 1A. Do not use auxiliary power input when speaker J1 is connected to a PoE power source.

1.7 Optional Connections (J9 and J10)

Figure 1-3. Optional Connections (J9 and J10)

Function	J10 Connections	J9 Connections	Function
*Auxiliary power input for use when PoE power is not available. 12 VDC @ 1A.	AUX POWER (+) (+12VDC @ 1A)	AUX SPEAKER (-)	Auxiliary 8-Ohm speaker connection (not to be used when the Clock is connected.
	AUX POWER (-)	AUX SPEAKER (+)	
Relay contacts rated at 30 VDC @ 1A.	RELAY COM	BTN SENSE GND	Provides ground for the BTN SENSE signal.
	RELAY NO	LINE OUT (-)	Audio line - level output to external audio amplifier. 2v P-P into 10k Ohms.
Provides power to (optional) illuminated button LED. 5 VDC @ 100 mA.	BUTTON LED (+)	LINE OUT (+)	
Provides sense signal when the button is pressed.	BTN SENSE	BUTTON LED (-)	Provides switched return path to the illuminated button LED.

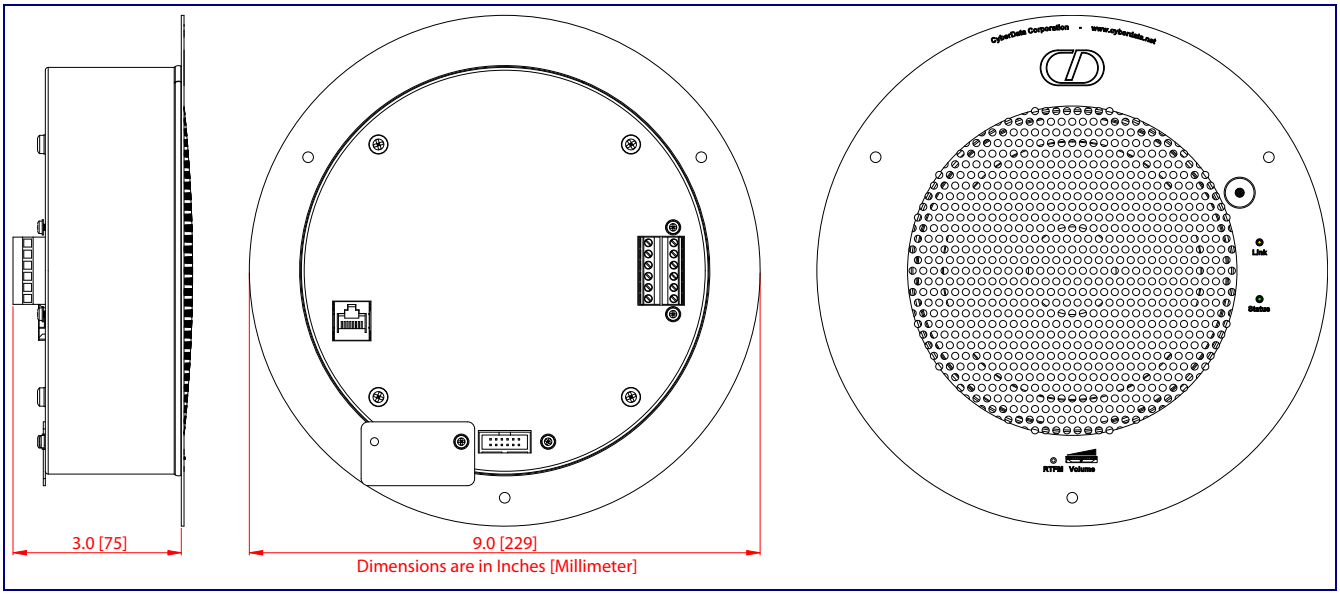


*Do not use auxiliary power input when speaker J1 is connected to a PoE power source.

1.8 Dimensions

Figure 1-4 shows the dimensions for the V2 Speaker.

Figure 1-4. Dimensions



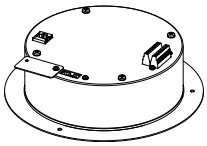
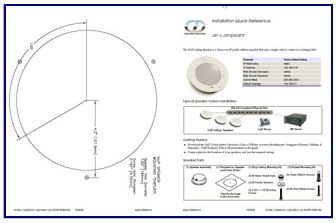
2 Installing the VoIP V2 Speaker

2.1 Parts List

Table 2-1 illustrates the parts for each speaker and includes kits for the drop ceiling and drywall mounting.

Note The installation template for the V2 Speaker is located on the *Installation Quick Reference Guide* that is included in the packaging with each speaker.

Table 2-1. Parts

Quantity	Part Name	Illustration
1	V2 Speaker Assembly	
1	Installation Quick Reference Guide	
1	Speaker Mounting Accessory Kit (Part #070054A)	

2.2 Device Configuration

Set up and configure each speaker *before* you mount it.

CyberData delivers each speaker with the following factory default values:

Table 2-2. Factory Network Default Settings—Default of Network

Parameter	Factory Default Setting
IP Addressing	DHCP
IP Address[a]	10.10.10.10
Web Access Username	admin
Web Access Password	admin
Subnet Mask[a]	255.0.0.0
Default Gateway[a]	10.0.0.1

a. Default if there is not a DHCP server present.

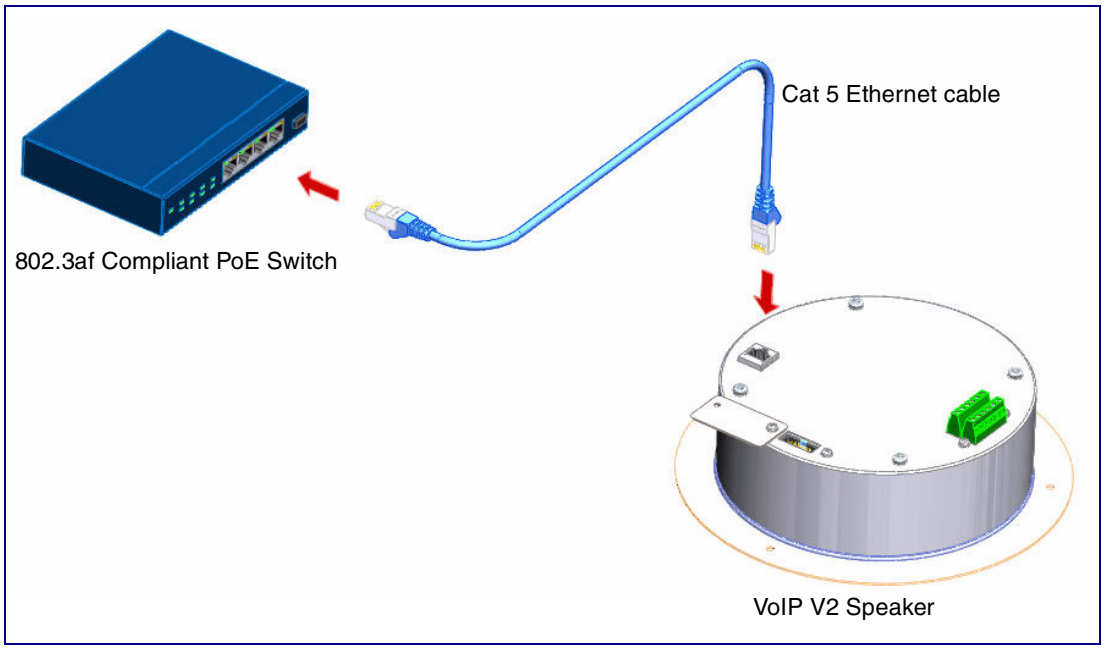
2.2.1 Connect Power to the Speaker

Figure 2-1 through Figure 2-3 illustrates how to connect power to the VoIP V2 Speaker.

2.2.1.1 VoIP V2 Speaker to a 802.3af Compliant PoE Switch

Figure 2-1 illustrates how to connect the VoIP V2 Speaker to a 802.3af compliant PoE switch via a Cat 5 Ethernet cable.

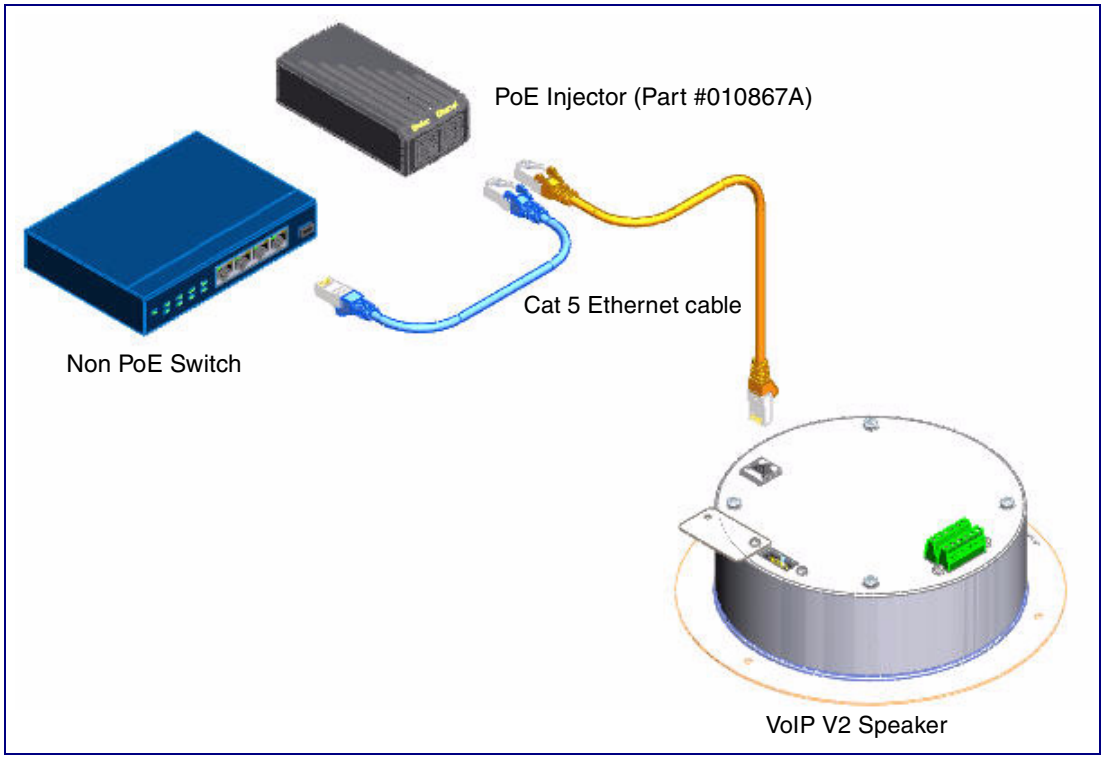
Figure 2-1. VoIP V2 Speaker to a 802.3af Compliant PoE Switch



2.2.1.2 VoIP V2 Speaker (with PoE Injector) to a 802.3af Compliant PoE Switch

In Figure 2-2, if a PoE switch is not available, you will need a PoE Injector, part #010867A (ordered separately). A PoE Injector is a power supply solution for those who have a standard Non PoE Switch.

Figure 2-2. VoIP V2 Speaker (with PoE Injector) to a Non PoE Switch



2.2.1.3 Running the V2 Speaker with Auxiliary Power

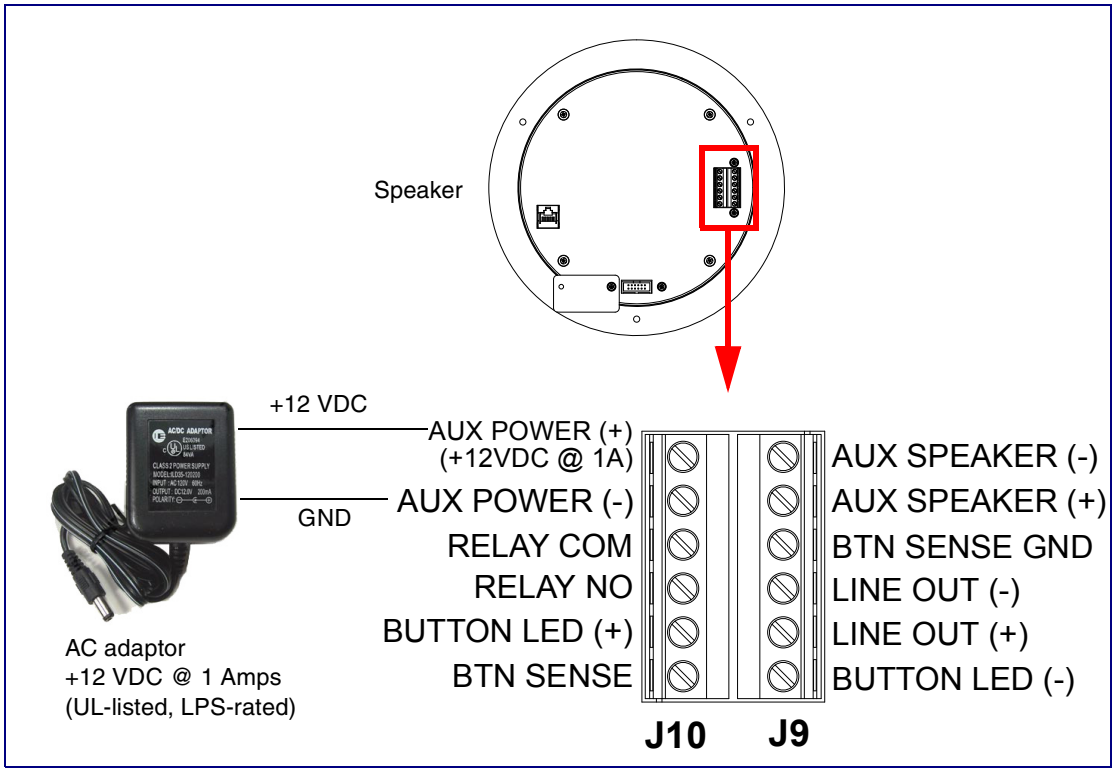
In Figure 2-3, the power for the V2 Speaker can either come from an 802.3af Network connection or from an external source.

GENERAL ALERT

Caution

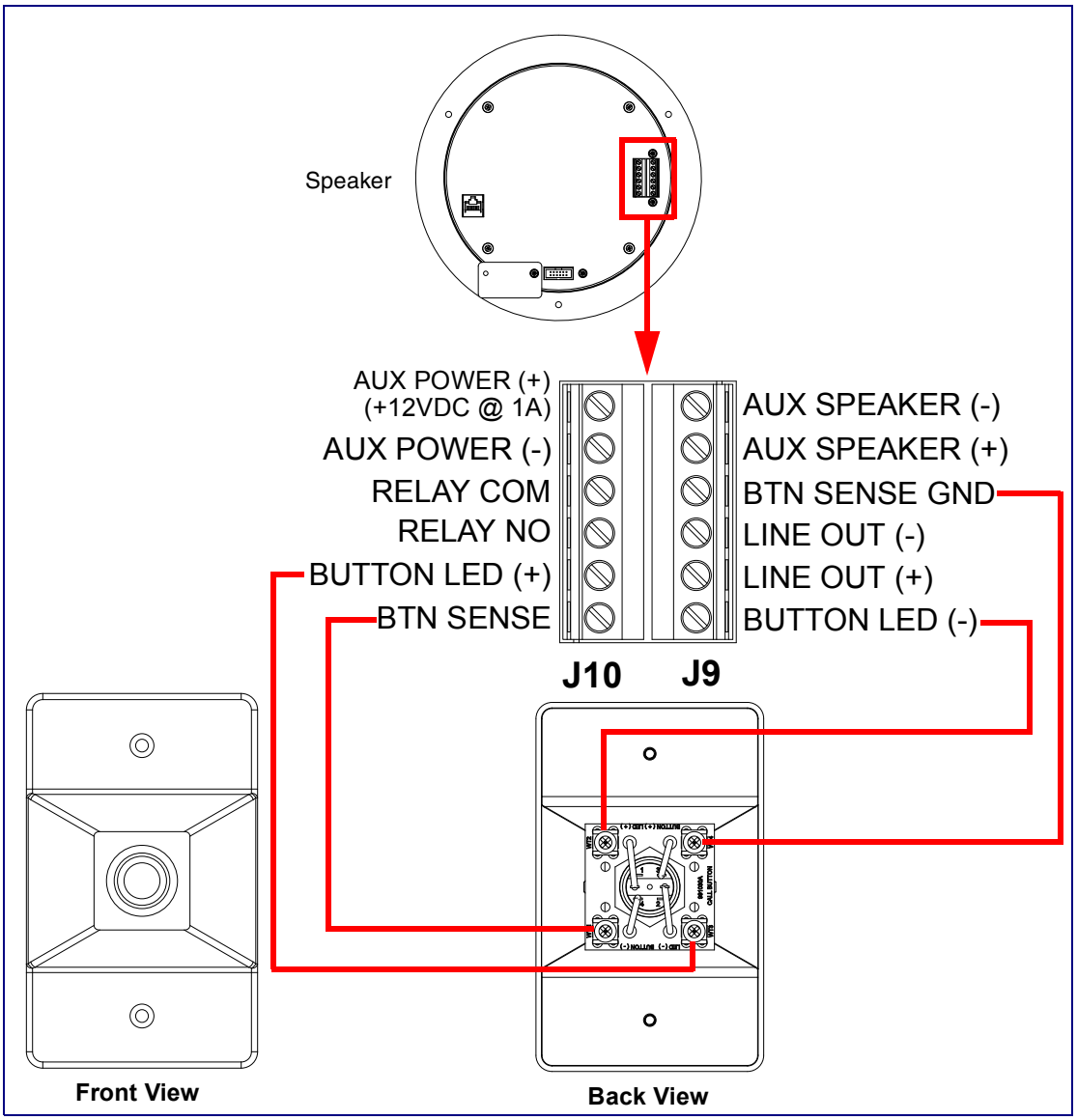
Operational Note: Do not connect an auxiliary power supply when the V2 Speaker is connected to a PoE power source through J1. Improper operation or equipment damage may occur.

Figure 2-3. Running the V2 Speaker with Auxiliary Power



2.2.1.4 V2 Speaker with Auxiliary Remote Call Button (CyberData Part #011073)

Figure 2-4. V2 Speaker with Auxiliary Remote Call Button



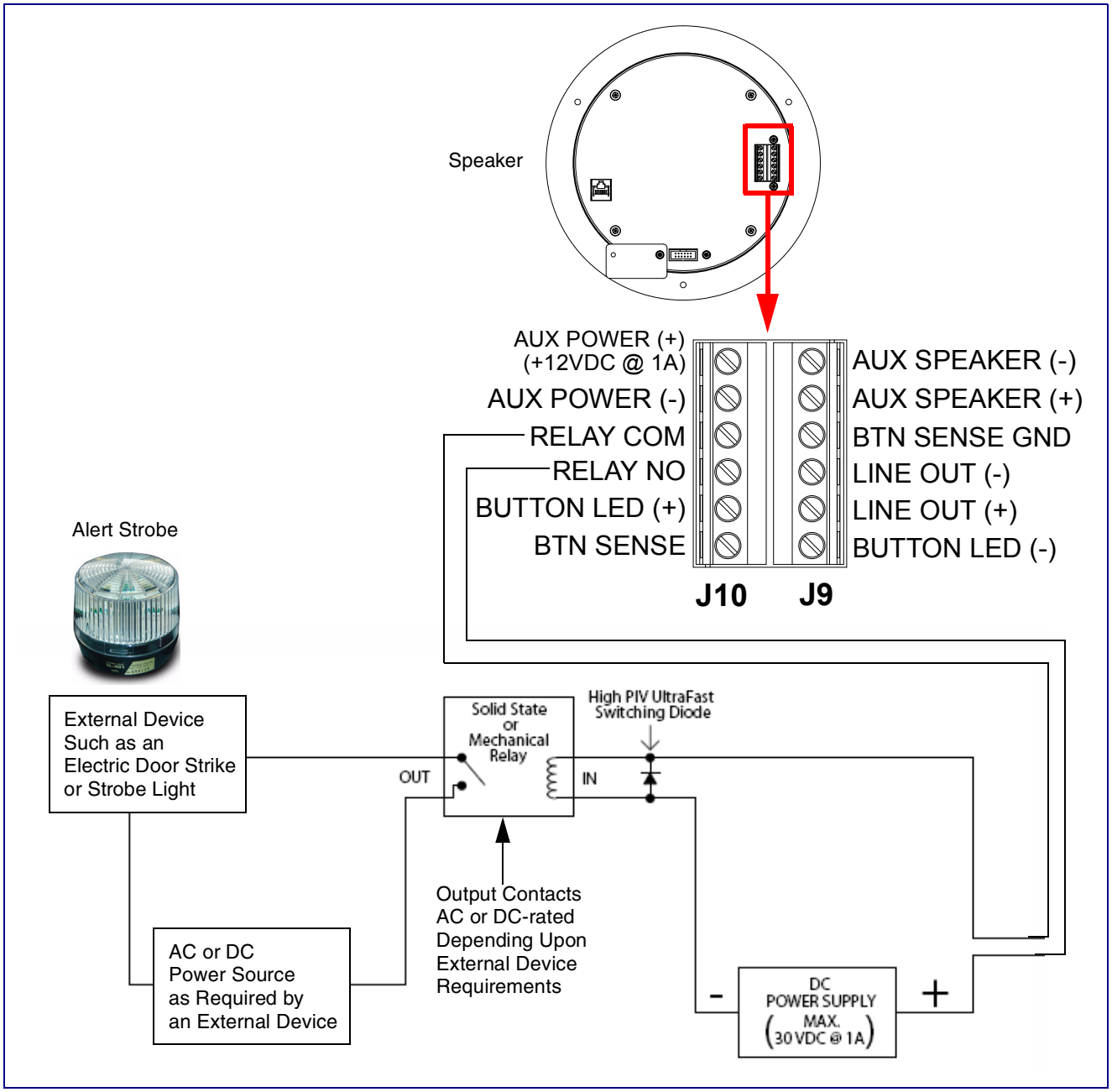
2.2.2 Installation Options

This section shows various installation options for the V2 Speaker.

2.2.2.1 V2 Speaker with an External Device

In Figure 2-5, when the V2 Speaker is called from a remote phone, the relay on the speaker can be programmed to drive an external device such as an alert strobe. This external device may also be addressed from a separate Unified Communication (UC) server.

Figure 2-5. V2 Speaker with Alert Strobe



2.2.2.2 V2 Speaker with Auxiliary Speaker Connection

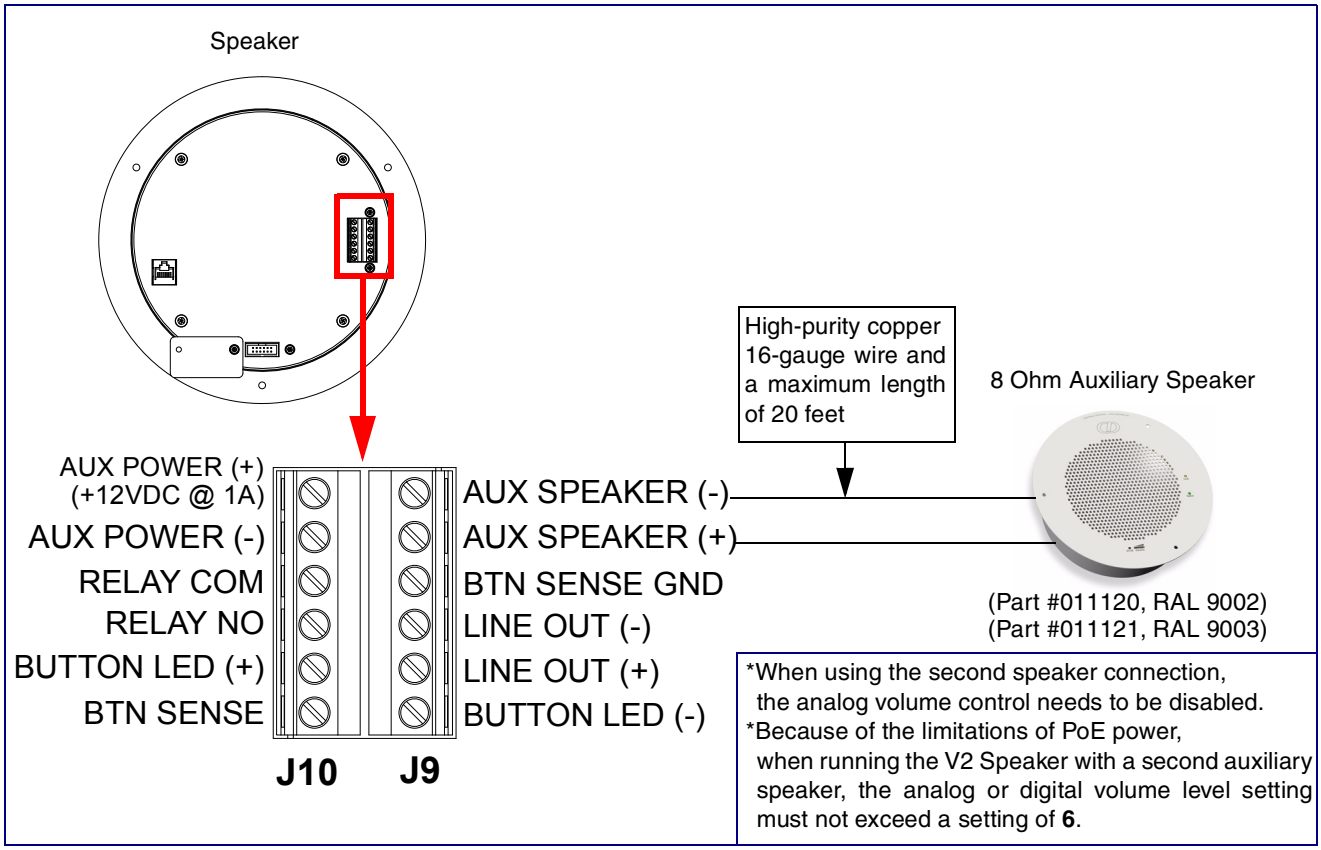
In Figure 2-6, the V2 Speaker supports an amplified audio output for a second analog speaker. While the total speaker wattage is the same, by connecting a low cost analog speaker, additional coverage can be realized.

GENERAL ALERT

Caution

Operational Note: Because of the limitations of PoE power, when running the V2 Speaker with a second auxiliary speaker, the analog or digital volume level setting must not exceed a setting of **6**.

Figure 2-6. V2 Speaker with Auxiliary Speaker Connection

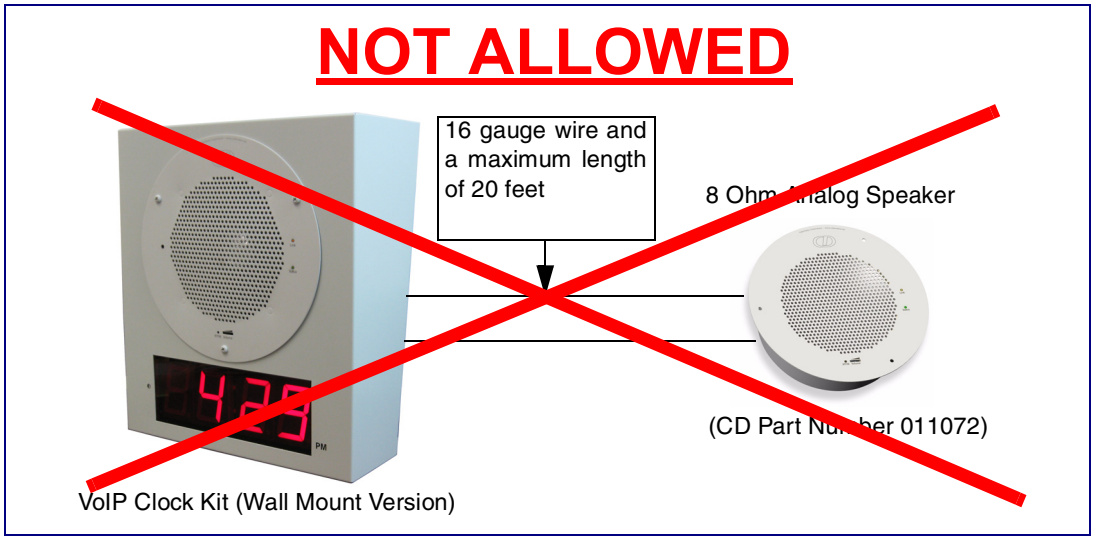

Speaker
High-purity copper 16-gauge wire and a maximum length of 20 feet
8 Ohm Auxiliary Speaker
(Part #011120, RAL 9002)
(Part #011121, RAL 9003)
AUX POWER (+) (+12VDC @ 1A)
AUX POWER (-)
RELAY COM
RELAY NO
BUTTON LED (+)
BTN SENSE
AUX SPEAKER (-)
AUX SPEAKER (+)
BTN SENSE GND
LINE OUT (-)
LINE OUT (+)
BUTTON LED (-)
J10
J9
*When using the second speaker connection, the analog volume control needs to be disabled.
*Because of the limitations of PoE power, when running the V2 Speaker with a second auxiliary speaker, the analog or digital volume level setting must not exceed a setting of 6.

GENERAL ALERT

Caution

Operational Note: You must not use the V2 Speaker in combination with both a Clock Kit and an auxiliary speaker. The V2 Speaker may only be used separately with an auxiliary speaker or used separately with a Clock Kit. See Figure 2-7, "Clock Kit with Extra Speaker Connection is NOT ALLOWED."

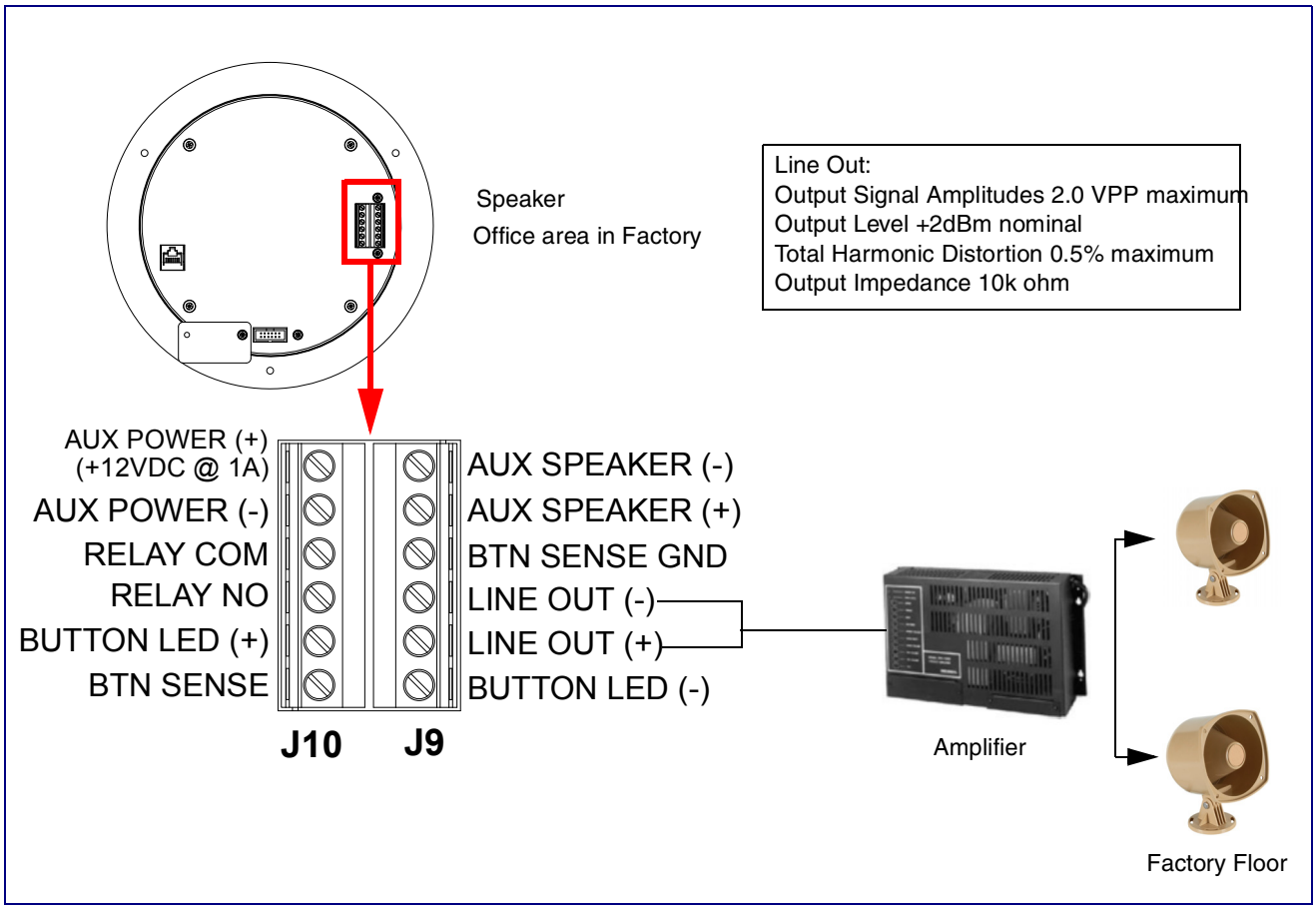
Figure 2-7. Clock Kit with Extra Speaker Connection is NOT ALLOWED.


NOT ALLOWED
16 gauge wire and a maximum length of 20 feet
8 Ohm Analog Speaker
(CD Part Number 011072)
VoIP Clock Kit (Wall Mount Version)

2.2.2.3 V2 Speaker with Line Out

In Figure 2-8, for areas that require more speaker volume, the V2 Speaker can be connected directly to an auxiliary amplifier to drive additional horns or speakers. This is done through the line-out connection.

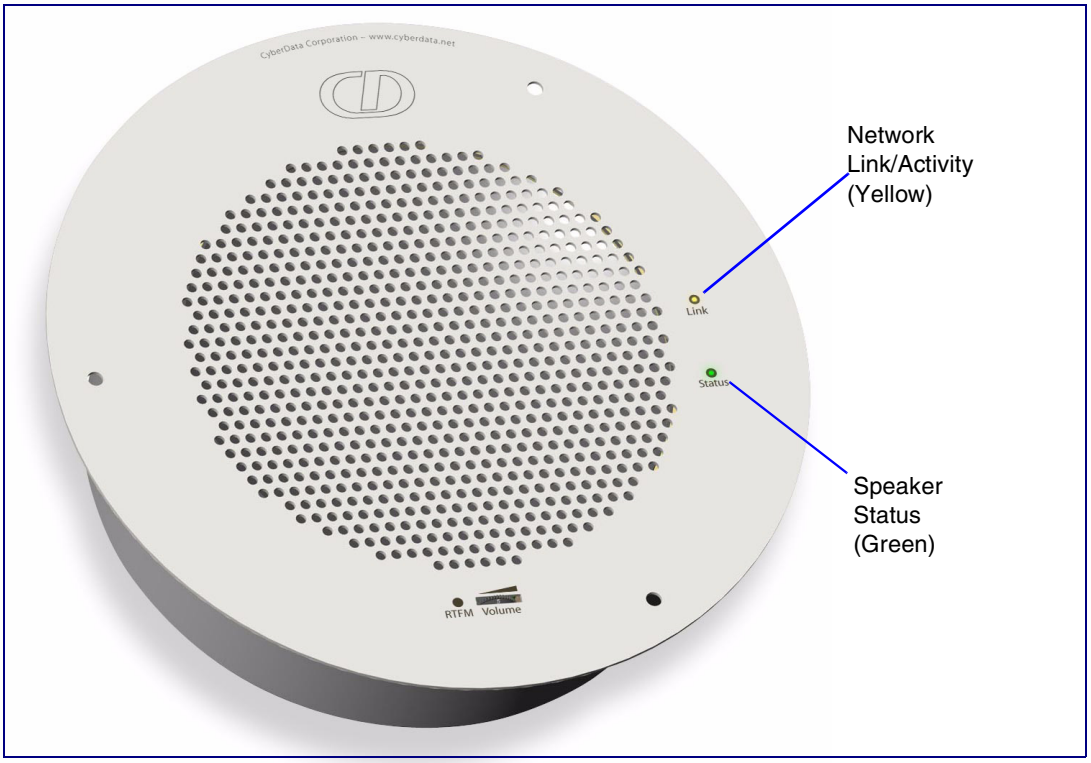
Figure 2-8. V2 Speaker with Line Out



2.2.3 Confirm that the Speaker is Operational and Linked to the Network

After connecting the speaker to the 802.3af compliant Ethernet hub, the LEDs on the speaker face confirm that the speaker is operational and linked to the network.

Figure 2-9. Status and Activity LEDs



2.2.3.1 Status LED

After supplying power to the speaker:

1. The green power/status LED and the yellow network LED comes on immediately.
2. After about 23 seconds with a static IP address (or 27 seconds if the board is set to use DHCP), the green LED will blink twice to indicate that the board is fully booted. The speaker will beep at this time if the **Beep on Initialization** option is enabled on the **Device Configuration Page** (see Section 2.3.3, "Configure the Device Parameters").

Note If the board is set to use DHCP and there is not a DHCP server available on the network, it will try five times with a three second delay between tries and eventually fall back to the programmed static IP address (by default 10.10.10.10). This process will take approximately 80 seconds.

Note The front power/status LED will remain solid on during operation.

If there is a button attached to the speaker, it will come on during boot, flash in conjunction with the power/status LED when fully booted, and then turn on or off according to the **Button Lit When Idle** option on the **Device Configuration Page** (see Section 2.3.3, "Configure the Device Parameters"). The button LED will flash when a call is active.

2.2.3.2 Link LED

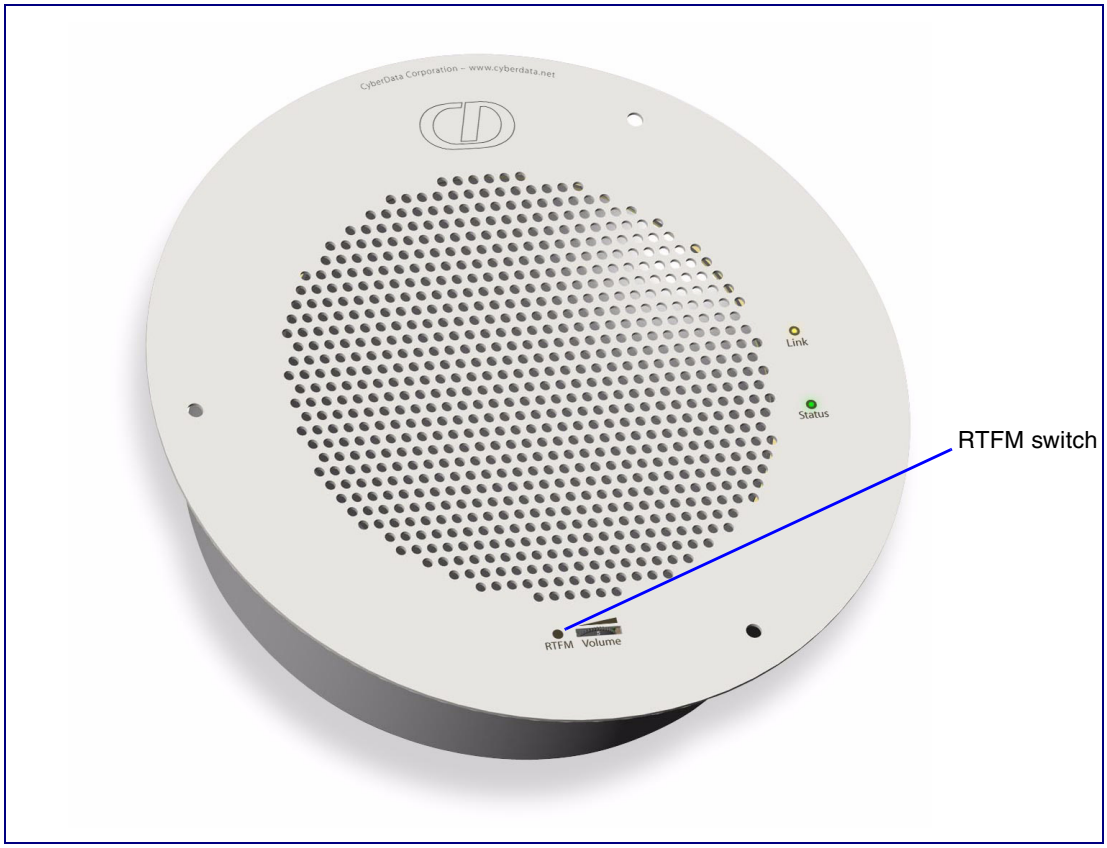
- The **Link** LED is illuminated when the network link to the speaker is established.
- The **Link** LED blinks to indicate network traffic.

2.2.4 Confirm the IP Address, Test the Audio, and Check the Volume

2.2.4.1 Reset Test Function Management (RTFM) Switch

When the speaker is operational and linked to the network, use the Reset Test Function Management (RTFM) switch (Figure 2-10) on the speaker face to announce and confirm the speaker's IP Address, test that the audio is working, and check the volume.

Figure 2-10. RTFM Switch



To announce a speaker's current IP address:

1. Press and release the RTFM switch within a five second window.
2. When you hear the IP address announcement, check the speaker volume.

Note The speaker will use DHCP to obtain the new IP address (DHCP-assigned address or default to 10.10.10.10 if a DHCP server is not present).

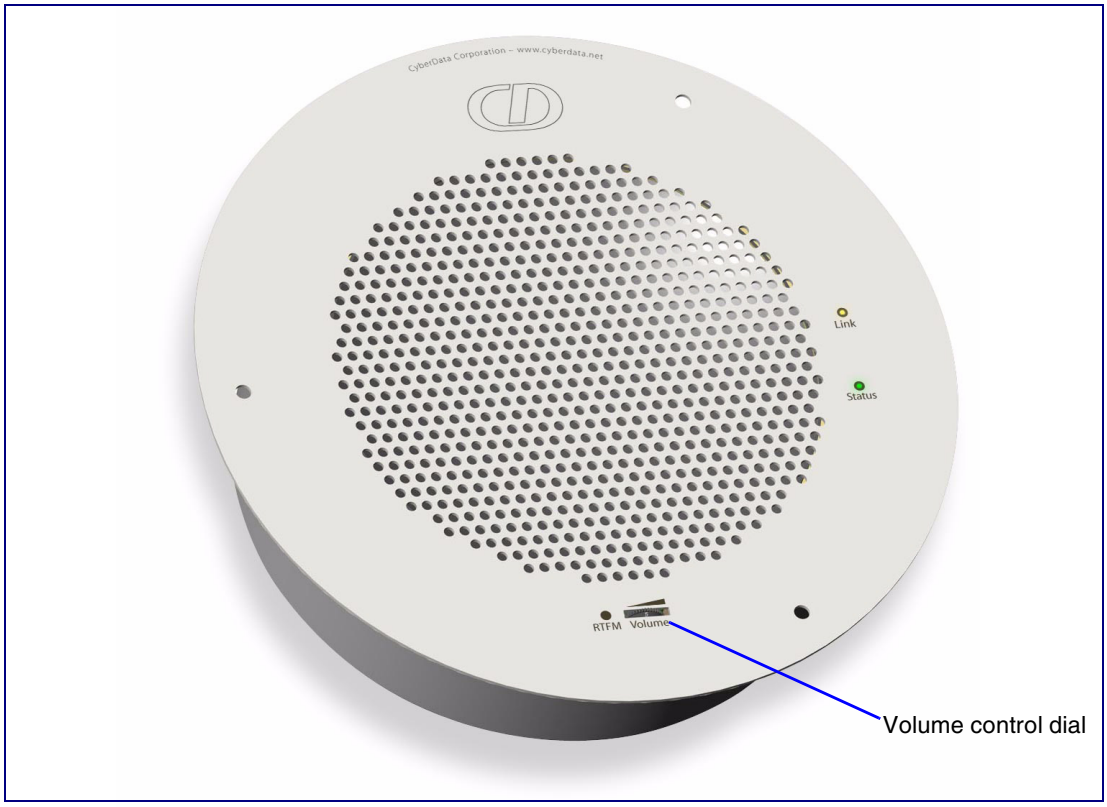
Note Pressing and holding the RTFM switch for longer than five seconds will restore the speaker to the factory default settings.

2.2.5 Adjust the Volume

To adjust the speaker volume, turn the **Volume** control dial (Figure 2-11) on the speaker face.

Note The V2 Speaker has two volume controls: **Internal** (web-based) and **External** (volume knob). The external volume control can be disabled from the web interface by selecting **Use Digital Volume Control** on the **Device Configuration Page** (see Section 2.3.3, "Configure the Device Parameters").

Figure 2-11. Volume Control



2.2.6 How to Set the Factory Default Settings

2.2.6.1 RTFM Switch

When the speaker is operational and linked to the network, use the Reset Test Function Management (RTFM) switch (Figure 2-12) on the speaker face to set the factory default settings.

Figure 2-12. RTFM Switch

To set the factory default settings:

1. Press and hold the **RTFM** switch for more than five seconds.
2. The speaker announces that it is restoring the factory default settings.

Note The speaker will use DHCP to obtain the new IP address (DHCP-assigned address or default to 10.10.10.10 if a DHCP server is not present).

Factory Default Settings for Each Web Page

The following figures shows the factory default settings for each web page:

- Figure 2-13, "Home Page"
- Figure 2-14, "Device Configuration Page"
- Figure 2-15, "Network Configuration Page"
- Figure 2-16, "SIP Configuration Page"
- Figure 2-19, "Multicast Configuration Setup"
- Figure 2-20, "Audio Configuration Page"
- Figure 2-24, "NTP Server and Clock Configuration Page"
- Figure 2-25, "Event Configuration Page"
- Figure 2-27, "Firmware Upgrade Page"

2.3 Configure the Speaker Parameters

To configure the speaker online, use a standard web browser.

Configure each speaker and verify its operation *before* you mount it. When you are ready to mount a speaker, refer to Appendix A, "Mounting the Speaker" for instructions.

All speakers are initially configured with the default IP settings indicated in Table 2-3:

Note When configuring more than one speaker, attach the speakers to the network and configure one at a time to avoid IP address conflicts

Table 2-3. Factory Network Default Settings—Default of Network

Parameter	Factory Default Setting
IP Addressing	DHCP
IP Address[a]	10.10.10.10
Web Access Username	admin
Web Access Password	admin
Subnet Mask[a]	255.0.0.0
Default Gateway[a]	10.0.0.1

a. Default if there is not a DHCP server present.

2.3.1 V2 Speaker Web Page Navigation

Table 2-4 shows the navigation buttons that you will see on every V2 Speaker web page.

Table 2-4. V2 Paging Amplifier Web Page Navigation

Web Page Item	Description
	Link to the **Home** page.
	Link to the **Device Configuration** page.
	Link to the **Networking** page.
	Link to go to the **SIP Configuration** page.
	Link to go to the **Nightringer** page.
	Link to the **Multicast Configuration** page.
	Link to the **Audio Configuration** page.
	Link to the **Clock Configuration** page.[a]
	Link to the **Event Configuration** page.[b]
	Link to the **Autoprovisioning Configuration** page.
	Link to the **Update Firmware** page.

a. This page is used only if the CyberData Clock Kit (part number 011023 [wall-mounted version] or 011024 [flush-mounted version]) is installed.

b. This page is used only if the CyberData Clock Kit (part number 011023 [wall-mounted version] or 011024 [flush-mounted version]) is installed.

2.3.2 Log in to the Configuration Home Page

1. Open your browser to the V2 Speaker IP address.

Note If the network does not have access to a DHCP server, the device will default to an IP address of 10.10.10.10.

Note Make sure that the PC is on the same IP network as the V2 Speaker.

Note You may also download CyberData's VoIP Discovery Utility program which allows you to easily find and configure the default web address of the CyberData VoIP products.

CyberData's VoIP Discovery Utility program is available at the following website address:

http://www.cyberdata.net/support/voip/discovery_utility.html

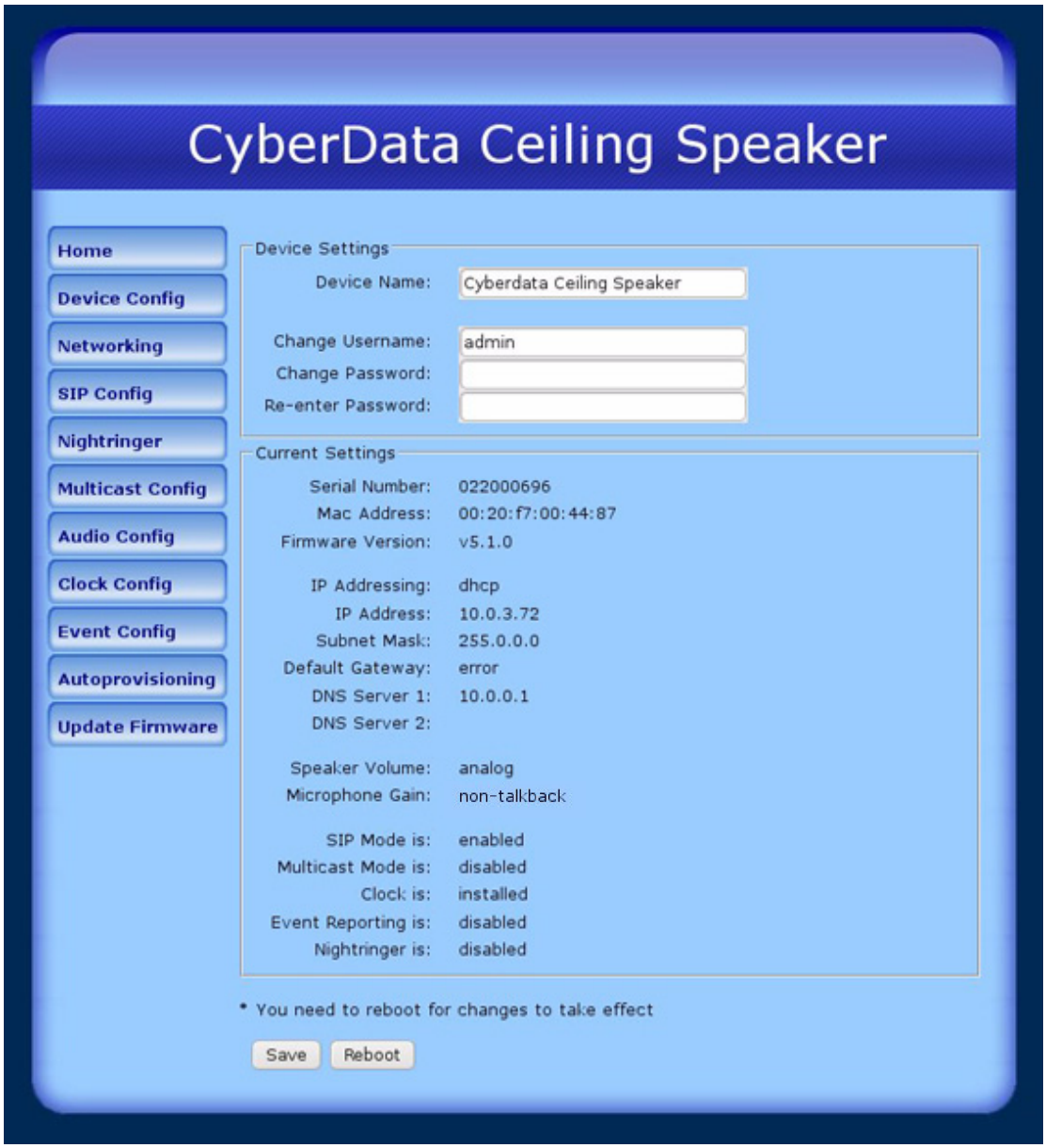
Note The Speaker ships in DHCP mode. To get to the **Home** page, use the discovery utility to scan for the device on the network and open your browser from there.

2. When prompted, use the following default **Web Access Username** and **Web Access Password** to access the **Home Page** (Figure 2-13):

   Web Access Username: **admin**

   Web Access Password: **admin**

Figure 2-13. Home Page



Note Figure 2-13 shows the factory default settings.

3. On the **Home Page**, review the setup details and navigation buttons described in Table 2-5.

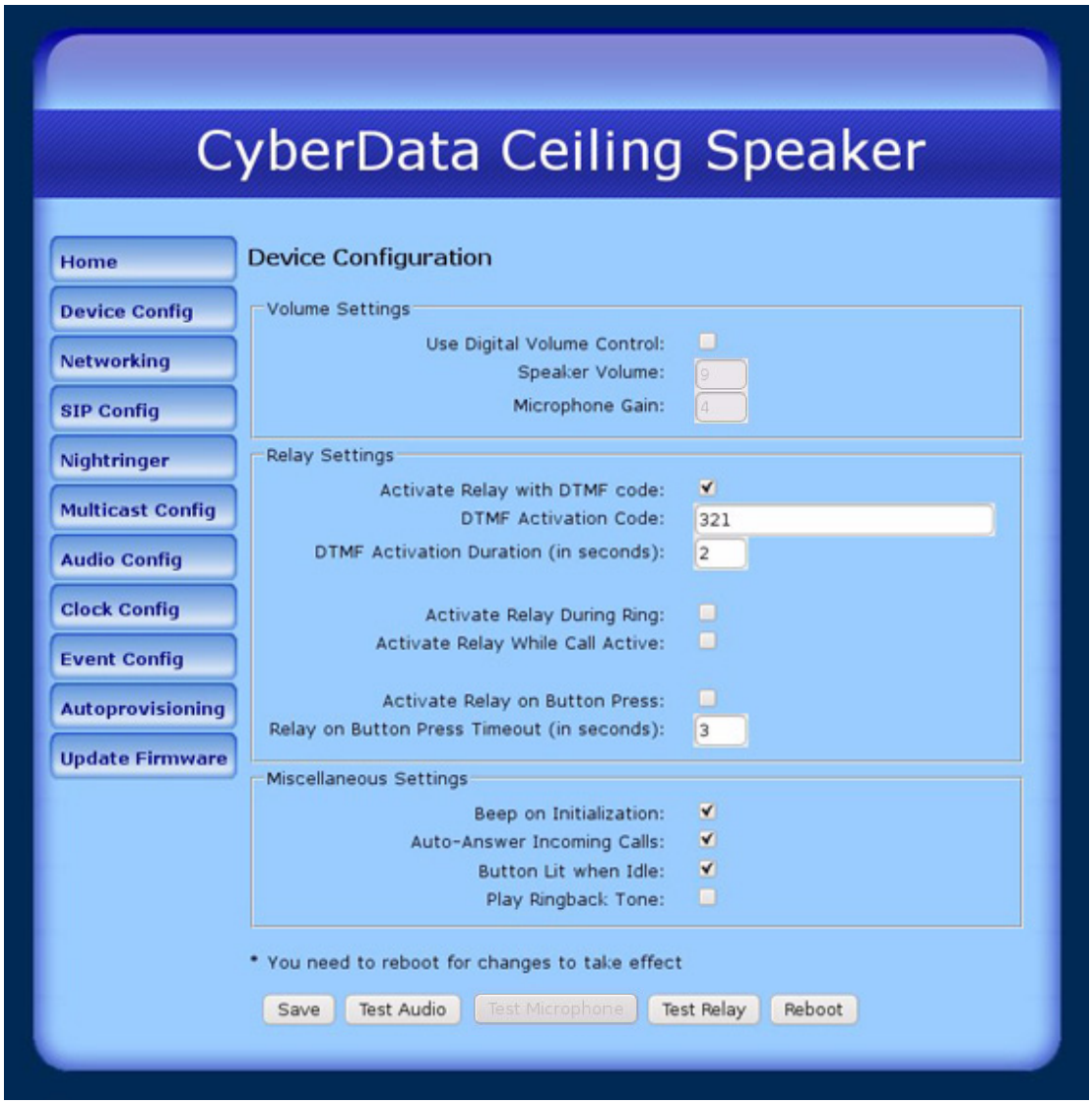
Table 2-5. Home Page Overview

Web Page Item	Description
Device Settings	
Device Name	Shows the device name (25 character limit).
Change Username	Type in this field to change the username (25 character limit).
Change Password	Type in this field to change the password (19 character limit).
Re-enter Password	Type the password again in this field to confirm the new password (19 character limit).
Current Settings	
Serial Number	Shows the device serial number.
Mac Address	Shows the device Mac address.
Firmware Version	Shows the current firmware version.
IP Addressing	Shows the current IP addressing setting (**DHCP** or **Static**).
IP Address	Shows the current IP address.
Subnet Mask	Shows the current subnet mask address.
Default Gateway	Shows the current default gateway address.
DNS Server 1	Shows the current DNS Server 1 address.
DNS Server 2	Shows the current DNS Server 2 address.
Speaker Volume	Shows the current speaker volume mode: **Digital** (web page) or **Analog** (volume knob).
SIP Mode is	Shows the current status of the SIP Mode.
Multicast Mode is	Shows the current status of the Multicast Mode.
Clock is	Shows the current status of the Clock.
Event Reporting is	Shows the current status of the Event Reporting.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

2.3.3 Configure the Device Parameters

1. Click the **Device Configuration** button to open the **Device Configuration** page. See Figure 2-14.

Figure 2-14. Device Configuration Page



Note Figure 2-14 shows the factory default settings.

2. On the **Device Configuration** page, you may enter values for the parameters indicated in Table 2-6.

Table 2-6. Device Configuration Parameters

Web Page Item	Description
Volume Settings	
Speaker Volume	Type the desired speaker volume level into this field (1 character limit).
Use Digital Volume Control	When selected, you can bypass the analog volume knob on the front of the speaker. The volume level will only be determined by the digital **Speaker Volume** setting on the **Device Configuration** page.
Relay Settings	
Activate Relay with DTMF Code	When selected, the relay can be activated with a DTMF code.
DTMF Activation Code	Type the desired DTMF activation code (25 character limit).
DTMF Activation Duration (in seconds)	Type the desired DTMF activation duration (in seconds) (1 character limit). **NOTE**: A DTMF activation duration of **0** will toggle the relay indefinitely or until the activation code is sent again
Activate Relay During Ring	When selected, the relay will be activated for as long as the call is active. **NOTE**: When the phone is set to **Auto Answer**, it will not ring and this option does nothing.
Activate Relay While Call Active	When selected, the relay will be activated for as long as the call is active.
Activate Relay on Button Press	When selected, the relay will be activated when the Call Button is pressed.
Relay on Button Press Timeout (in seconds)	Type the desired time (in seconds) that you want the relay to activate after the Call Button is pressed (1 character limit).
Miscellaneous Settings	
Beep on Initialization	When selected, you will hear a beep when the speaker initializes.
Auto-Answer Incoming Calls	When selected, the device will automatically answer incoming calls. When **Auto Answer** is Off, the device will play a ringtone through the speaker until someone presses the button.
Button Lit When Idle	When selected, the Call Button remains lit when idle.
Play Ringback Tone	When selected, you will hear a ringback tone while making a call.
	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
	Click on the **Test Audio** button to do an audio test. When the **Test Audio** button is pressed, you will hear a voice message for testing the device audio quality and volume.
	Click on the **Test Relay** button to do a relay test.

Table 2-6. Device Configuration Parameters (continued)

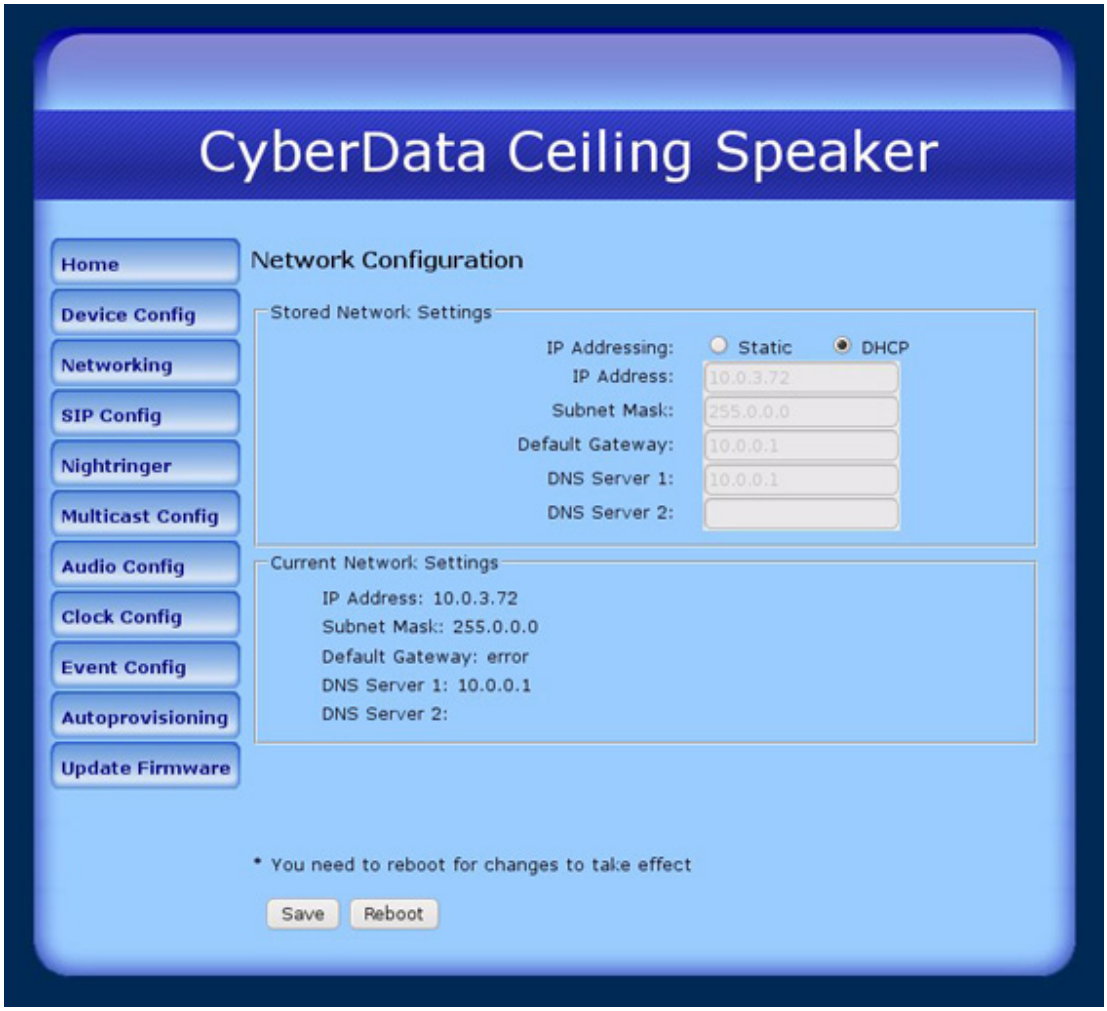
Web Page Item	Description
	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click the **Save** button.

2.3.4 Configure the Network Parameters

1. Click the **Networking** button to open the **Network Configuration** page (Figure 2-15).

Figure 2-15. Network Configuration Page



Note Figure 2-15 shows the factory default settings.

2. On the **Network Configuration** page, enter values for the parameters indicated in Table 2-7.

Table 2-7. Network Configuration Parameters

Web Page Item	Description
Stored Network Settings	Shows the settings stored in non-volatile memory.
IP Addressing*	Select either **DHCP IP Addressing** or **Static IP Addressing** by marking the appropriate radio button. If you select **Static**, configure the remaining parameters indicated in Table 2-7. If you select **DHCP**, go to Step 3.
IP Address*	Enter the Static IP address.
Subnet Mask	Enter the Subnet Mask address.

Table 2-7. Network Configuration Parameters (continued)

Web Page Item	Description
Default Gateway	Enter the Default Gateway address.
DNS Server 1*	Enter the DNS Server 1 address.
DNS Server 2*	Enter the DNS Server 2 address.
Current Network Settings	Shows the current network settings.
IP Address	Shows the current Static IP address.
Subnet Mask	Shows the current Subnet Mask address.
Default Gateway	Shows the current Default Gateway address.
DNS Server 1	Shows the current DNS Server 1 address.
DNS Server 2	Shows the current DNS Server 2 address.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

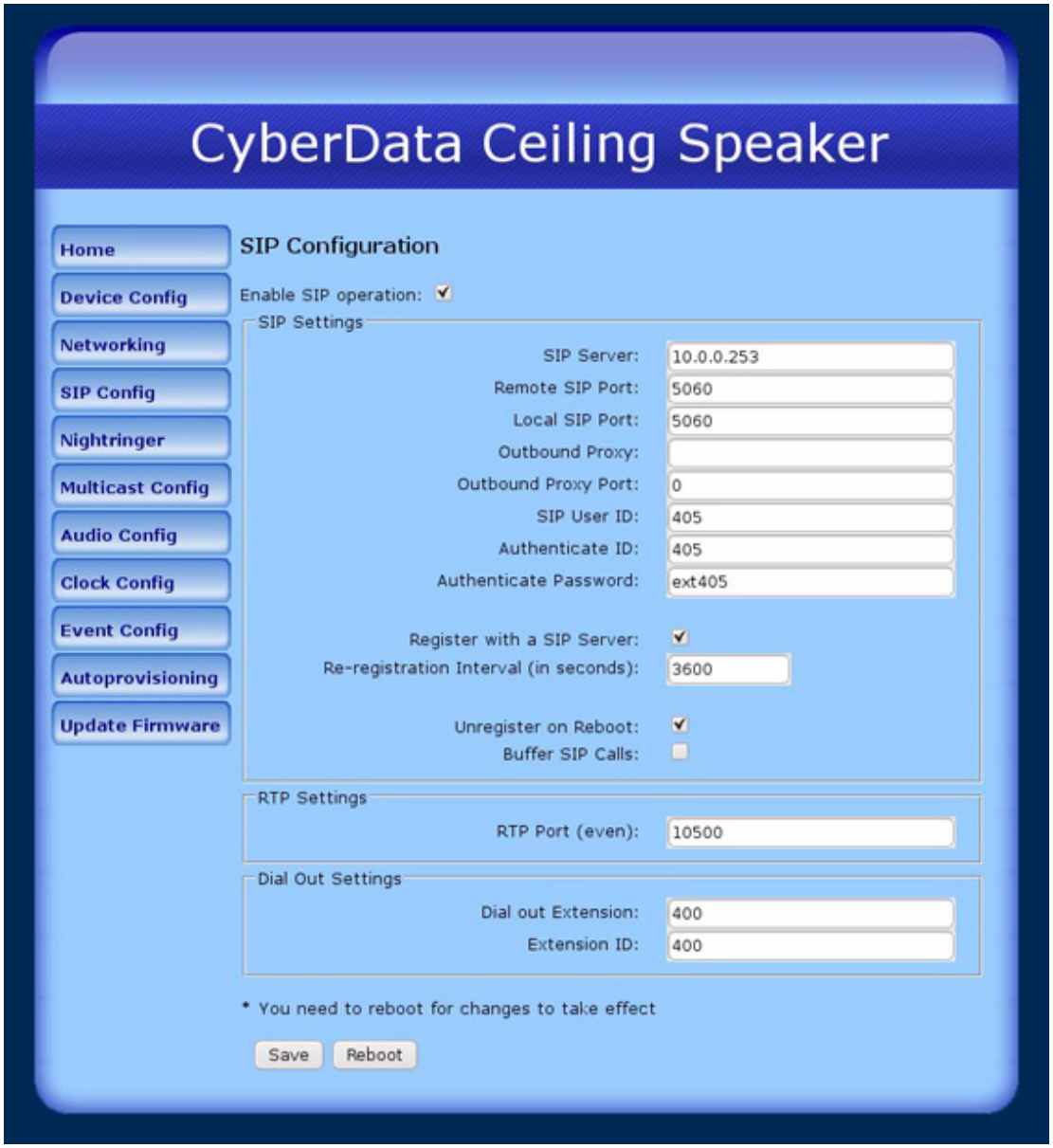
3. After changing the parameters, click **Save Settings**. This updates the changed parameters and reboots the V2 Speaker if appropriate.
4. Connect the V2 Speaker to the target network.
5. From a system on the same network as the V2 Speaker, open a browser with the new IP address of the V2 Speaker.

2.3.5 Configure the SIP Parameters

1. Click **SIP Config** to open the **SIP Configuration** page (Figure 2-16).

Note For specific server configurations, go to the following website address: http://www.cyberdata.net/support/server/index.html

Figure 2-16. SIP Configuration Page



Note Figure 2-16 shows the factory default settings.

2. On the **SIP Configuration** page, you may enter values for the parameters indicated in Table 2-8.

Table 2-8. SIP Configuration Parameters

Web Page Item	Description
Enable SIP Operation	Enables or disables SIP operation.
SIP Settings	
SIP Server*	Type the SIP server represented as either a numeric IP address in dotted decimal notation or the fully qualified host name (255 character limit [FQDN]).
Remote SIP Port*	Type the **Remote SIP Port** number (default 5060) (8 character limit).
Local SIP Port*	Type the **Local SIP Port** number (default 5060) (8 character limit).
Outbound Proxy	Type the Outbound Proxy as either a numeric IP address in dotted decimal notation or the fully qualified host name (255 character limit [FQDN]).
Outbound Proxy Port	Type the Outbound Proxy Port number (8 character limit).
SIP User ID*	Type the **SIP User ID** (up to 64 alphanumeric characters).
Authenticate ID*	Type the **Authenticate ID** (up to 64 alphanumeric characters).
Authenticate Password*	Type the **Authenticate Password** (up to 64 alphanumeric characters).
Register with a SIP Server*	Enable or disable SIP Registration. For information about Point-to-Point Configuration, see Section 2.3.5.2, "Point-to-Point Configuration".
Re-registration Interval (in seconds)*	Type the SIP Registration lease time in minutes (default is 60 minutes) (8 character limit). Re-registration Interval (in seconds)*
Unregister on Reboot*	When selected, on boot, the speaker will first register with a SIP server with a expiration delay of 0 seconds. This has the effect of unregistering any current devices on this extension.
Buffer SIP Calls	When this is enabled, SIP calls to the speaker will be stored in memory and will play when either the call is terminated or the buffer is full. The receive buffer is 2MB in size and this is equal to about four minutes of ulaw encoded audio.
RTP Settings	
RTP Port (even)	Specify the port number used for the RTP stream after establishing a SIP call. This port number has to be an even number.
Dial Out Settings	
Dial Out Extension	Type the dial out extension number (64 character limit). **Note**: For information about dial-out extension strings and DTMF tones, see Section 2.3.5.1, "Dial Out Extension Strings and DTMF Tones (using rfc2833)".
Extension ID	Type the desired Extension ID (64 character limit).

Table 2-8. SIP Configuration Parameters (continued)

Web Page Item	Description
Authenticate Password	Type the **Authenticate Password** (up to 64 alphanumeric characters).
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click on the **Save** button.

2.3.5.1 Dial Out Extension Strings and DTMF Tones (using rfc2833)

Dial out extensions support the addition of comma delimited pauses and sending additional DTMF tones (using rfc2833). The first comma will pause three seconds after a call is first established with a remote device. Subsequent commas will pause for 2 seconds. A pause of one second will be sent after each numerical digit.

Table 2-9. Examples of Dial-Out Extension Strings

Extension String	Resulting Action
302	Dial out extension 302 and establish a call
302,2	Dial out extension 302 and establish a call, wait 3 seconds then send the DTMF tone '2'
302,25,,,4,,1	Dial out extension 302 and establish a call, wait 3 seconds then send the DTMF tone '2', send out DTMF tone 5, wait 6 seconds, send out DTMF tone 4, wait 4 seconds, send out DTMF tone 1

Note The maximum number of total characters in the dial-out field is 25.

2.3.5.2 Point-to-Point Configuration

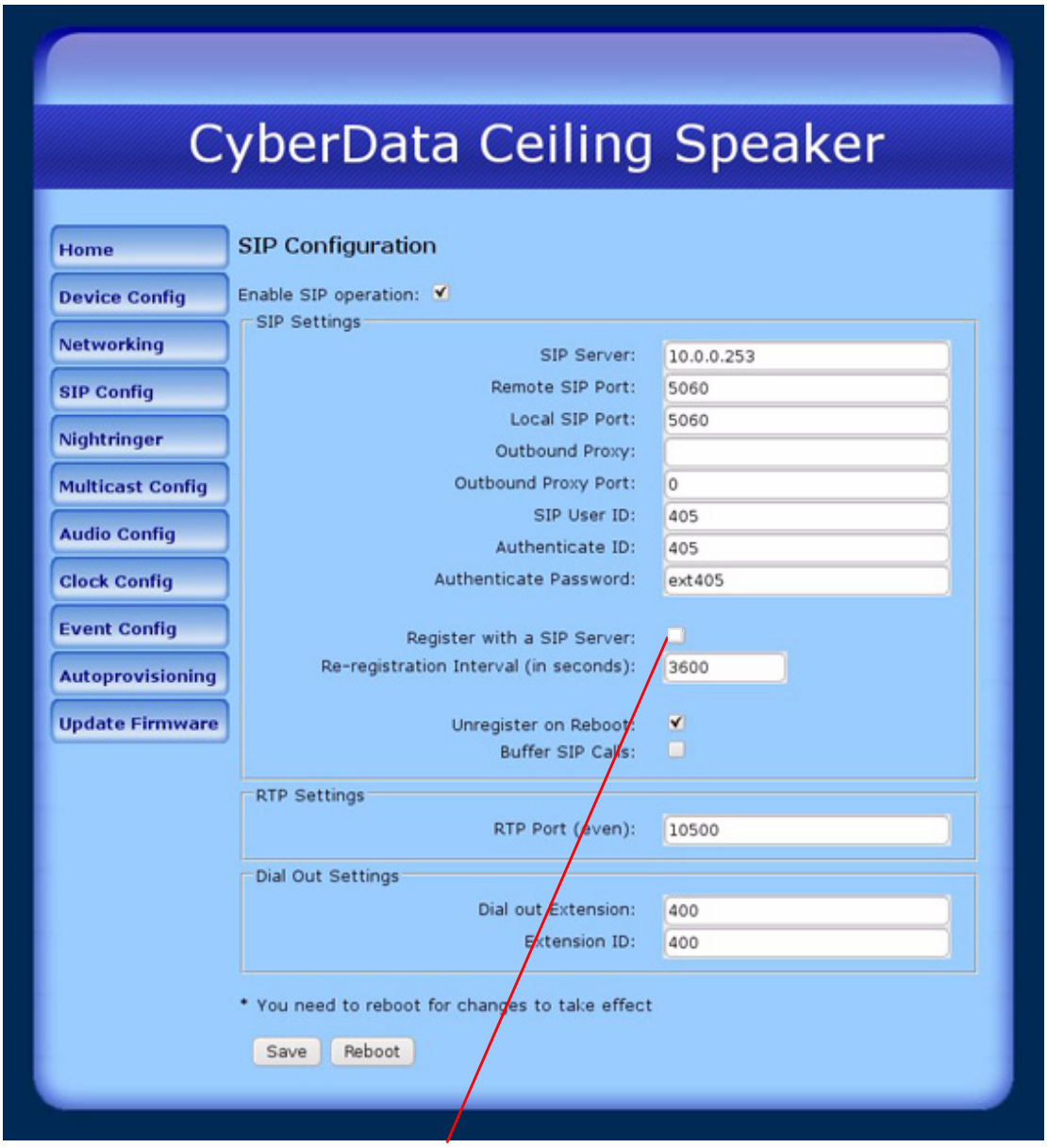
When the board is set to not register with a SIP server, it's possible to set the device to dial out to a single endpoint. To do this, do the following:

1. On the **SIP Configuration** page (Figure 2-17), make sure that the **Register with a SIP Server** parameter is not selected.
2. Type the IP address of the remote device that you want to contact into the **Dial out Extension** field

Note The delayed DTMF functionality is available in the Point-to-Point Mode.

Note Establishing point-to-point SiP calls may not work with all phones.

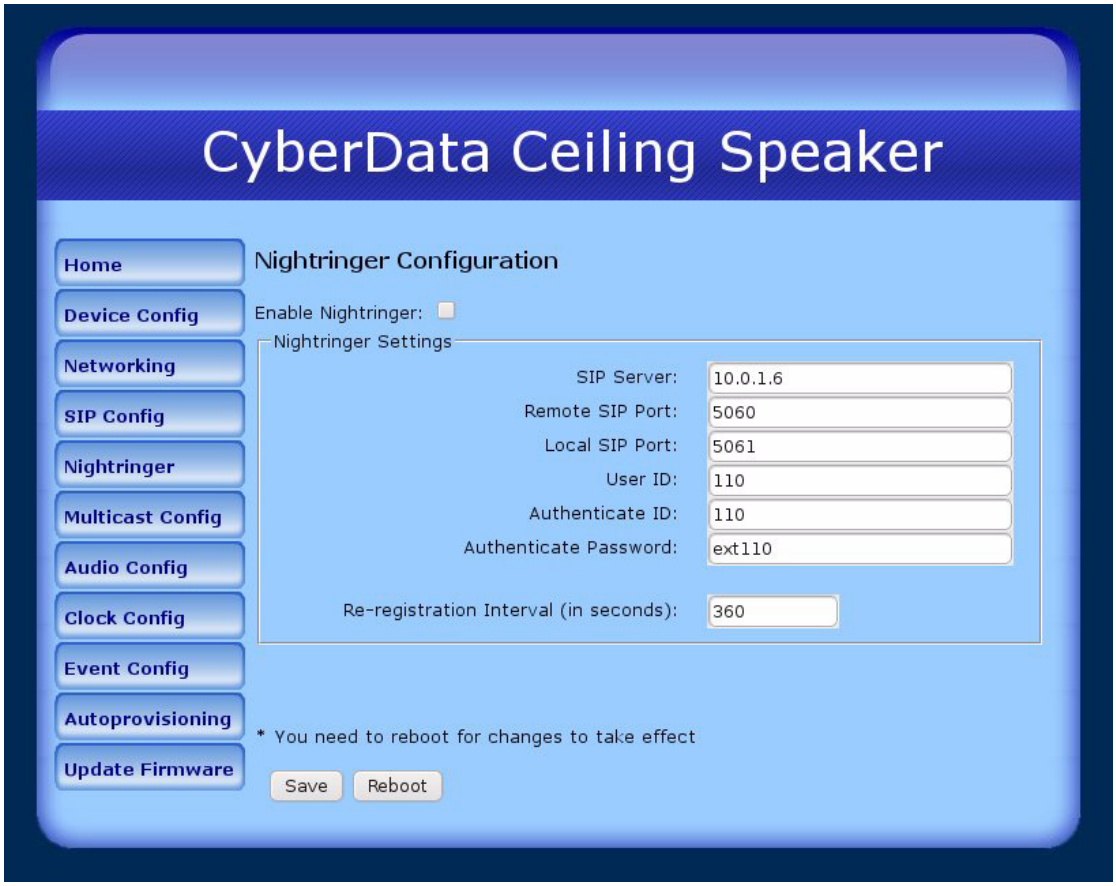
Figure 2-17. SIP Configuration Page Set to Point-to-Point Mode



2.3.6 Configure the Night Ringer Parameters

1. Click on the **Nightringer** button to open the **Nightringer Configuration** page. See Figure 2-19.

Figure 2-18. Nightringer Configuration Setup



Note Figure 2-19 shows the factory default settings.

2. On the **Nightringer Configuration** page, enter values for the parameters indicated in Table 2-11.

Table 2-10. Nightringer Configuration Parameters

Web Page Item	Description
Enable Nightringer	When the nightringer is enabled, the ceiling speaker will attempt to register a second extension with the SIP server. Any calls made to this extension will play a ringtone.
Nightringer Settings	
SIP Server	Type the SIP server represented as either a numeric IP address in dotted decimal notation.
Remote SIP Port	Type the Remote SIP Port number (default 5060) (8 character limit).
Local SIP Port	Type the Local SIP Port number (default 5060) (8 character limit). **Note**: This value cannot be the same as the **Local SIP Port*** found on the **SIP Configuration Page**.
User ID	Type the **User ID** (up to 64 alphanumeric characters).
Authenticate ID	Type the **Authenticate ID** (up to 64 alphanumeric characters).
Authenticate Password	Type the **Authenticate Password** (up to 64 alphanumeric characters).
Re-registration Interval (in seconds)*	Type the SIP Registration lease time in minutes (default is 60 minutes) (8 character limit). Re-registration Interval (in seconds)*
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click on the **Save** button.

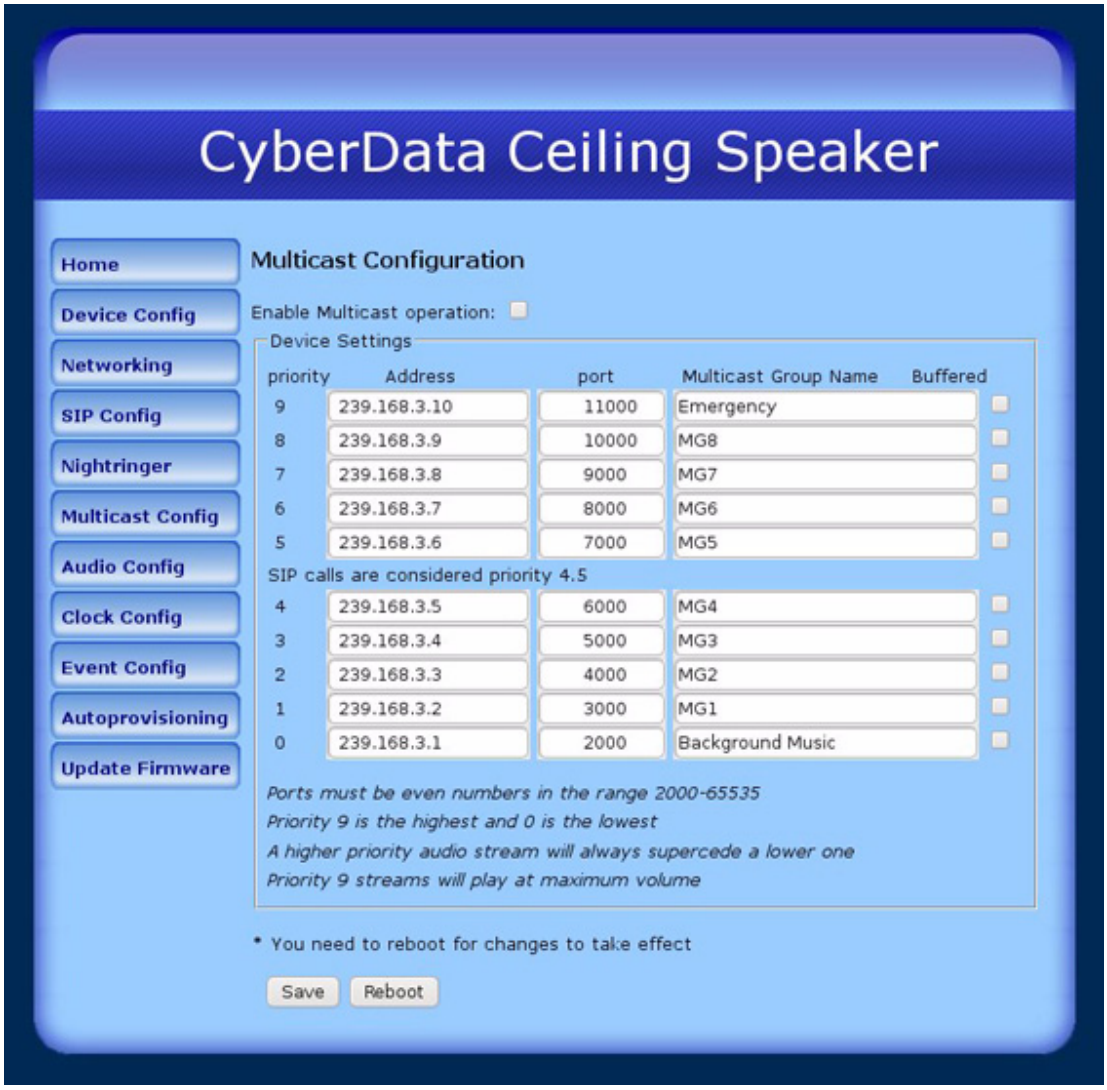
2.3.7 Configure the Multicast Parameters

Multicast groups use multicasting to create public address paging zones. Multicasting is based on the concept of a group. Multicast addresses specify an arbitrary group of IP hosts that have joined the group and want to receive traffic sent to the group. Group members send IGMP messages to their local multicast routers, allowing the group traffic traversal from the source.

Multicast configuration provides the ability to join up to 10 paging zones. A paging zone can consist of one, or many, CyberData multicast group-enabled speakers. There is no limit to how many speakers can be in a given paging zone. Each multicast group is defined by a multicast address and port number. Each multicast group is also assigned a priority, allowing simultaneously arriving pages to be serviced based on importance. Multicast groups are compatible with IGMP through version 3. The V2 Speaker supports simultaneous SIP and Multicast.

1. Click on the **Multicast Configuration** button to open the **Multicast Configuration** page. See Figure 2-19.

Figure 2-19. Multicast Configuration Setup



Note Figure 2-19 shows the factory default settings.

2. On the **Multicast Configuration** page, enter values for the parameters indicated in Table 2-11.

Table 2-11. Multicast Configuration Parameters

Web Page Item	Description
Enable Multicast Operation	Enables or disables multicast operation.
Device Settings	
Priority	Indicates the priority for the multicast group. Priority **9** is the highest (emergency streams). **0** is the lowest (background music). See Section 2.3.7.1, "Assigning Priority" for more details.
Address	Enter the multicast IP Address for this multicast group (15 character limit).
Port (range can be from 2000 to 65535)	Enter the port number for this multicast group (5 character limit). **Note**: The multicast ports have to be even values. The webpage will enforce this restriction.
Multicast Group Name	Assign a descriptive name for this multicast group (25 character limit).
Buffered	When buffering is enabled for a multicast stream, it will store any audio received on this socket to memory and play it back when the stream is stopped or the buffer is full.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click on the **Save** button.

2.3.7.1 Assigning Priority

When playing multicast streams, audio on different streams will preempt each other according to their priority in the list. An audio stream with a higher priority will interrupt a stream with a lower priority.

If both SIP and Multicast is enabled, SIP audio streams are considered priority **4.5**. SIP audio will interrupt multicast streams with priority **0** through **4** and will be interrupted by multicast streams with priority **5** through **9**.

During priority **9** multicast streams, the analog volume control is bypassed and the volume level is set to maximum.

Note SIP calls, buffered SIP calls, multicast streams, buffered multicast streams, ring tones, ringback tones, and nightring tones are all prioritized.

Ringtones and Nightringtones

Ringtones all play at the same priority level. This means that it is possible to have a nightring tone and a normal ringtone playing at the same time.

The maximum ringtone duration is 2,097,152 bytes or about four minutes of ulaw audio.

Lengthy Pages

Concerning how lengthy pages are handled (where someone puts the phone down for 15 minutes), after the 2MB limit is reached, further data will be thrown away while the audio file is played back. When the file is done playing, it will stop throwing away input and begin buffering data for another four minutes.

Therefore, with the buffered mode enabled on a stream playing background music, you will hear the following sequence of events:

1. Four minutes of silence.

2. Music from 0:00 through 4:00.

3. Four minutes of silence.

4. Music from 8:00 through 12:00 and so on.

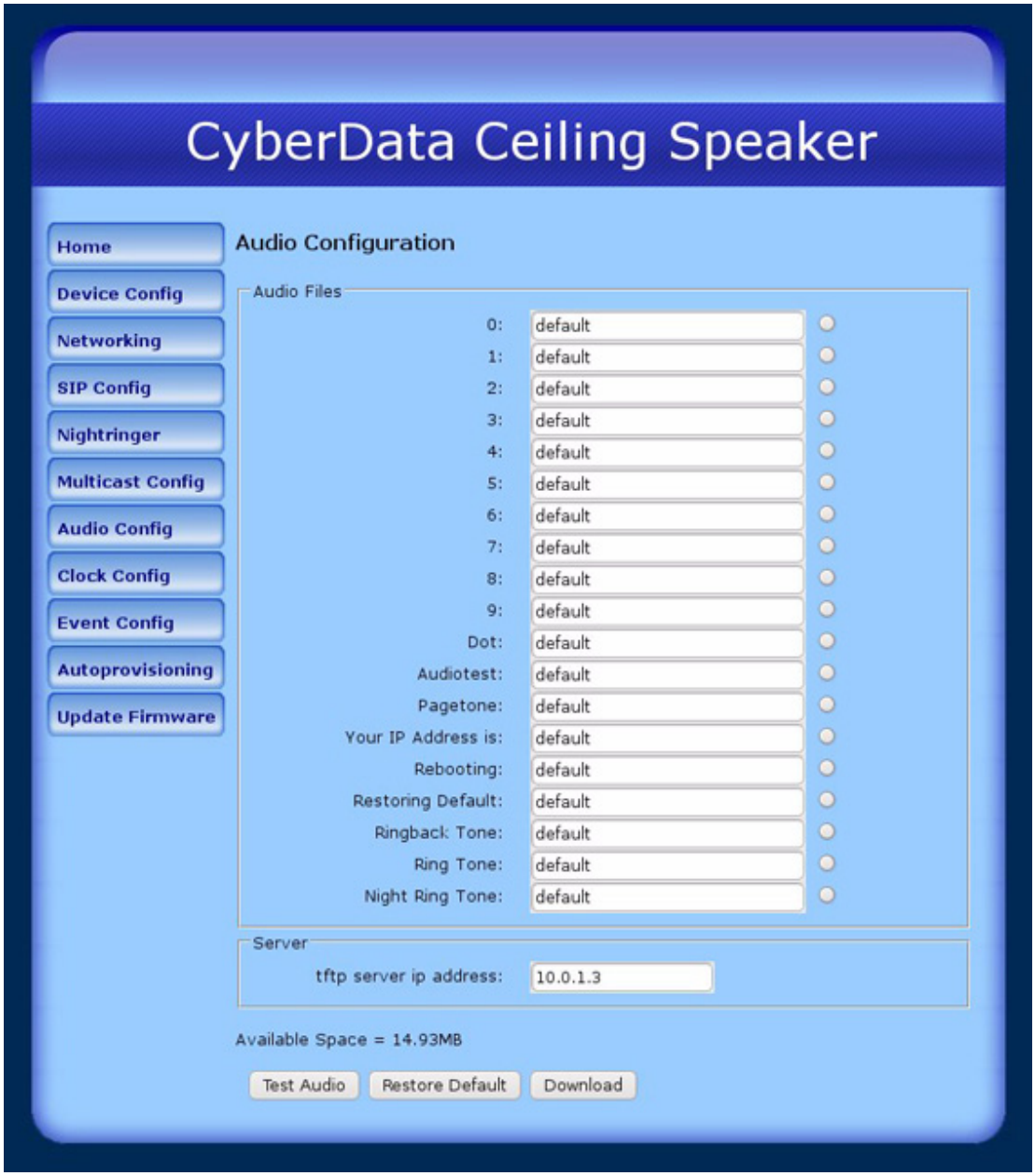
Buffered Audio

When the speaker is playing back buffered audio and this buffered audio is interrupted by a higher priority stream, once the higher priority streams is finished, the speaker will restart the lower priority stream from the beginning.

2.3.8 Configure the Audio Parameters

Click the **Audio Config** button to open the **Audio Configuration** page. See Figure 2-24. The **Audio Configuration** page is used to add custom audio to the board. User uploaded audio will take precedence over the audio files shipped with the Intercom.

Figure 2-20. Audio Configuration Page



Note Figure 2-20 shows the factory default settings.

On the **Audio Configuration** page, enter values for the parameters indicated in Table 2-12.

Note Each entry on the **Audio Configuration** page replaces one of the stock audio files on the board. When the input box displays the word **default**, the V2 Speaker is using the stock audio file. If that file is replaced with a user file, it will display the uploaded filename.

Table 2-12. Audio Configuration Parameters

Web Page Item	Description
Audio Files	
Radio button (to the right of each input box)	For each entry, if the user selects the radio button to the right of the input box they have several options: The **Test Audio** button will play that audio file. The **Restore Defaults** button will delete any user uploaded audio and restore the stock audio file. The **Download** button will download a new user audio file to the board. It will delete any pre-existing user uploaded audio files.
0-9	The name of the audio configuration option is the same as the spoken audio that plays on the board (24 character limit). '0' corresponds to the spoken word “zero.” '1' corresponds to the spoken word “one.” '2' corresponds to the spoken word “two.” '3' corresponds to the spoken word “three.” '4' corresponds to the spoken word “four.” '5' corresponds to the spoken word “five.” '6' corresponds to the spoken word “six.” '7' corresponds to the spoken word “seven.” '8' corresponds to the spoken word “eight.” '9' corresponds to the spoken word “nine.”
Dot	Corresponds to the spoken word “dot.” (24 character limit)
Audiotest	Corresponds to the message “This is the CyberData IP speaker test message...” (24 character limit)
Pagetone	Corresponds to a simple tone that is unused by default (24 character limit).
Your IP Address is	Corresponds to the message “Your IP address is...” (24 character limit).
Rebooting	Corresponds to the spoken word “Rebooting” (24 character limit).
Restoring default	Corresponds to the message “Restoring default” (24 character limit).
Ringback Tone	This is the ringback tone that plays when calling a remote extension (24 character limit).
Ring Tone	This is the tone that plays when set to ring when receiving a call (24 character limit).
Night Ring Tone	Specifies the ringtone for nightring. By default this parameter uses the same audio file that is selected for the **Ring Tone** parameter.
Server	
TFTP Server IP Address	Enter the TFTP server IP address.

Table 2-12. Audio Configuration Parameters (continued)

Web Page Item	Description
Downloading files from a tftp server at	Corresponds to the spoken word “dot” (24 character limit).
Available Space =	Indicates how much space is left in the internal non-volatile memory.
	Click on the **Test Audio** button to test the audio.
	Click on the **Restore Default** button to restore the default settings.
	Click on the **Download** button to download a file from a TFTP server at the address specified on the **Update Firmware** page. **Note**: Downloading large files can sometimes take a long time. It's not recommended to interrupt the process once it has started.

2.3.8.1 User-created Audio Files

User created audio files should be saved in the following format:

RIFF (little-endian) data, WAVE audio, Microsoft PCM, 16 bit, mono 8000 Hz

You can use the free utility *Audacity* to convert audio files into this format. See Figure 2-21 through Figure 2-23.

Figure 2-21. Audacity 1

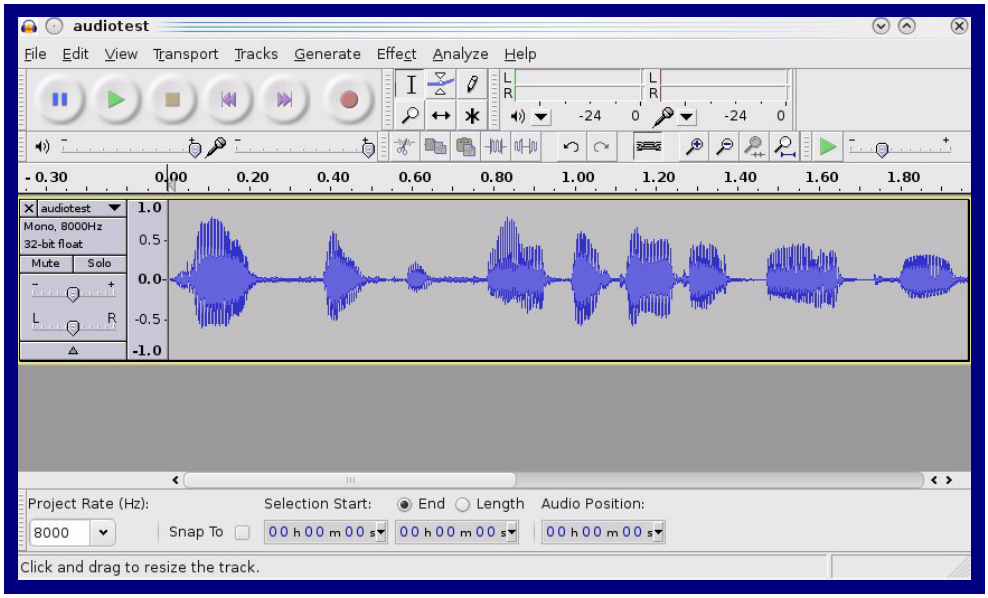
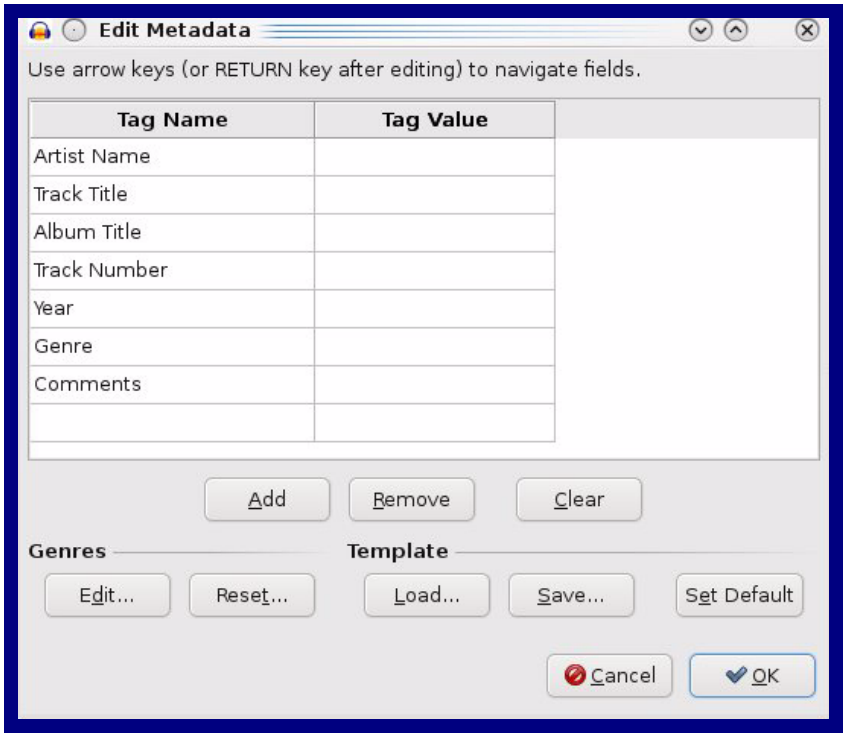


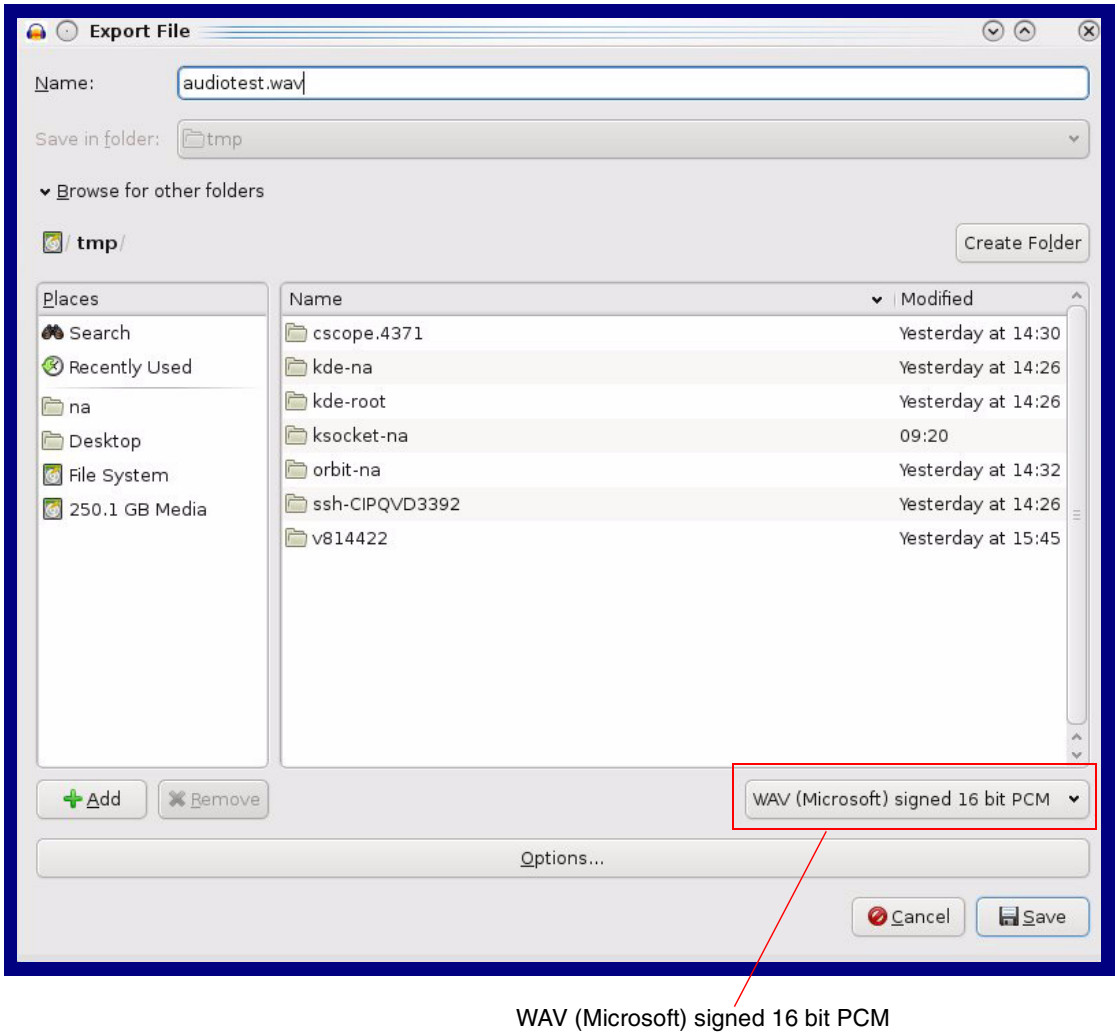
Figure 2-22. Audacity 2



When you export an audio file with Audacity, save the output as:

- **WAV (Microsoft) signed 16 bit PCM**.

Figure 2-23. WAV (Microsoft) signed 16 bit PCM

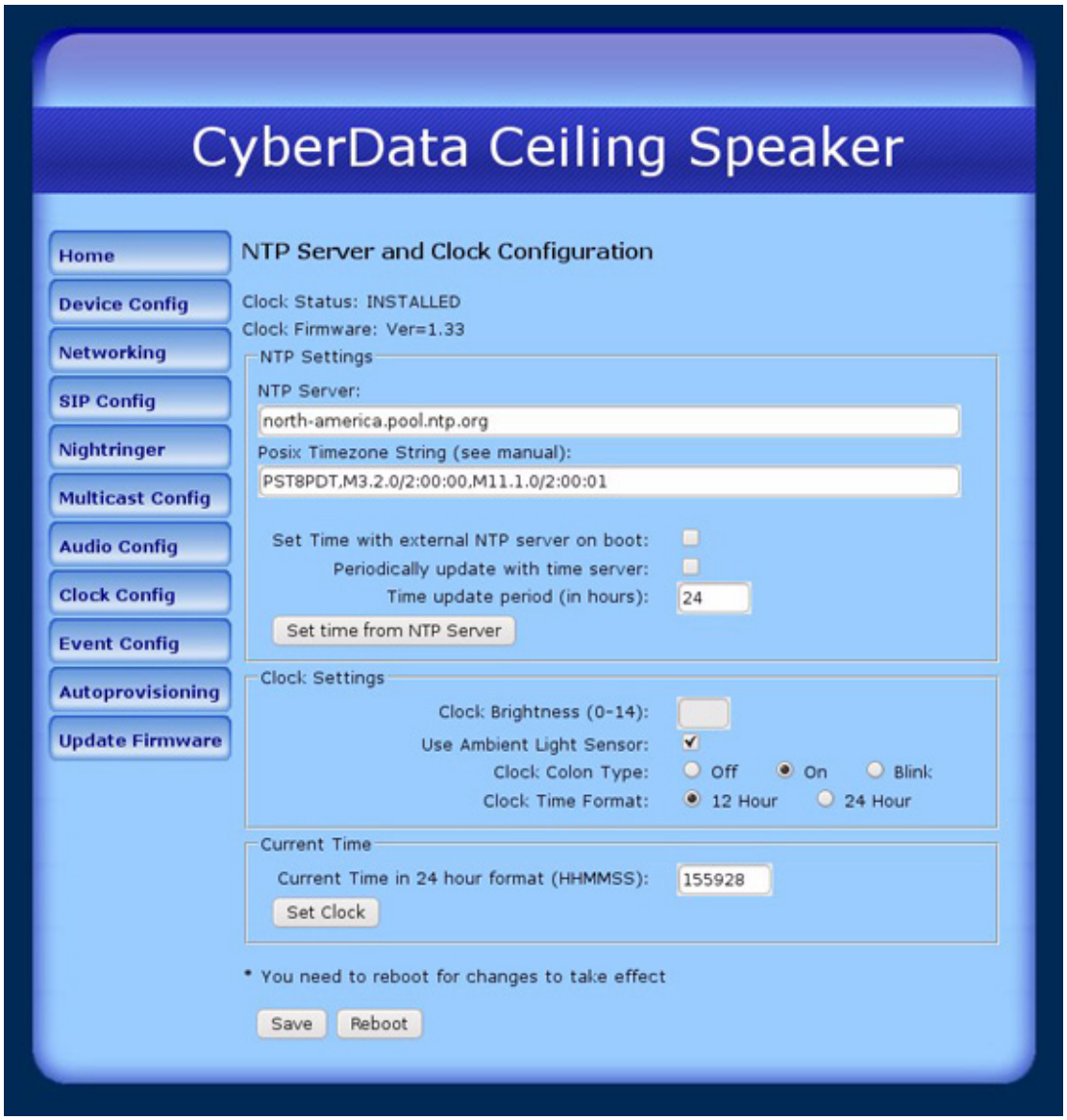


2.3.9 Configure the NTP Server and Clock Parameters

Click the **Clock Config** button to open the **NTP Server and Clock Configuration** page. See Figure 2-24.

Note The **Clock Configuration** page is always visible. If a clock is not installed, the **Clock Status** will indicate **NOT INSTALLED**. Otherwise it shows **INSTALLED**.

Figure 2-24. NTP Server and Clock Configuration Page



Note Figure 2-24 shows the factory default settings.

Table 2-13 shows the web page items on the **NTP Server and Clock Configuration** page.

Table 2-13. NTP Server and Clock Configuration

Web Page Item	Description
Clock Status	Displays the current clock status.
Clock Firmware	Displays the current clock firmware version.
NTP Settings	
NTP Server	Allows you to select the NTP server (64 character limit).
Posix Timezone String	See Section 2.3.9.1, "Time Zone Strings" (43 character limit).
Time Server Offset	Allows you to select the time server offset.
Set Time with External NTP Server on boot	When selected, the time is set with an external NTP server when the speaker restarts.
Periodically update with time server	When selected, the time is periodically updated with a time server.
Time update period (in hours)	Allows you to select the time updated period (in hours) (4 character limit).
Set time from NTP Server	Allows you to set the time from the NTP server.
Clock Settings	
Clock Brightness (0-14)	Allows you to select the clock brightness level (0-14) (2 character limit)
Use Ambient Light Sensor	Enables or disables the ambient light sensor.
Clock Colon Type	Allows you to select the clock colon type (**Off**, **On**, or **Blink**)
Clock Time Format	Allows you to select the clock format (12 or 24 hour)
Current Time	
Current Time in 24 hour format (**HHMMSS**)	Allows you to input the current time in the 24 hour format. (6 character limit)
Set Clock	Click on this button to set the clock after entering the current time.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

2.3.9.1 Time Zone Strings

The posix timezone string tells the internal date and time utilities how to handle daylight savings time for different timezones. Table 2-14 shows some common strings.

Table 2-14. Common Timezone Strings

Time Zone	Timezone String
US Pacific time	PST8PDT,M3.2.0/2:00:00,M11.1.0/2:00:00
US Mountain time	MST7MDT,M3.2.0/2:00:00,M11.1.0/2:00:00
US Eastern Time	EST5EDT,M3.2.0/2:00:00,M11.1.0/2:00:00
Phoenix Arizona[a]	MST7
US Central Time	CST6DST,M3.2.0/2:00:00,M11.1.0/2:00:00

a.Phoenix, Arizona does not use daylight savings time.

Table 2-15 shows a breakdown of the parts that constitute the following time zone string:

- ***CST6DST,M3.2.0/2:00:00,M11.1.0/2:00:00***

Table 2-15. Time Zone String Parts

Time Zone String Part	Meaning
CST6CDT	The timezone offset from GMT and three character identifiers for the timezone.
CST	Central Standard Time
6	The (hour) offset from GMT/UTC
CDT	Central Daylight Time
M3.2.0/2:00:00	The date and time when daylight savings begins.
M3	The third month (March)
.2	The 2nd occurrence of the day (next item) in the month
.0	Sunday
/2:00:00	Time of day to change
M11.1.0/2:00:00	The date and time when daylight savings ends.
M11	The eleventh month (November)
.1	The 1st occurrence of the day (next item) in the month
.0	Sunday
/2:00:00	Time of day to change

Time Zone String Examples

Table 2-16 has some more examples of time zone strings.

Table 2-16. Time Zone String Examples

Time Zone	Timezone String
Tokyo[a]	IST-9
Berlin[b]	CET-1MET,M3.5.0/1:00,M10.5.0/1:00

a.Tokyo does not use daylight savings time.

b.For Berlin, daylight savings time starts on the last Sunday in March at 01:00 UTC, and ends on the last Sunday in October at 01:00 UTC, and is one hour ahead of UTC.

Identifier Names

The three character timezone identifier (PST, EDT, IST, MUT) isn't important but it does need to be present to properly set the time. You can refer to the following URL for a list of identifier names:

http://75.43.29.149:8080/display/ATG/Time+Zone+Code+Standard

You can also use the following URL when a certain time zone applies daylight savings time:

http://www.timeanddate.com/time/dst2009.html

World GMT Table

Table 2-17 has information about the GMT time in various time zones.

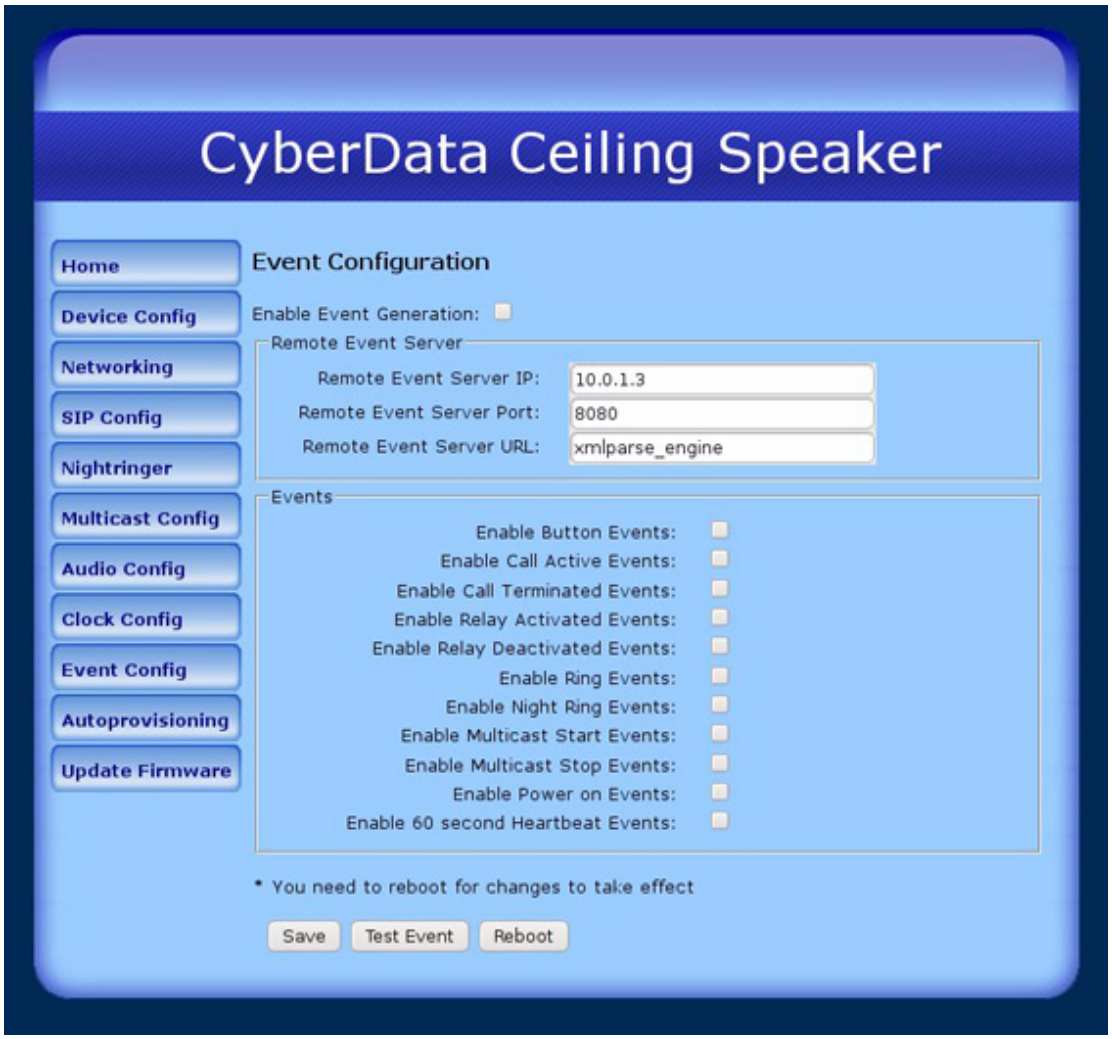
Table 2-17. World GMT Table

Time Zone	City or Area Zone Crosses
GMT-12	Eniwetok
GMT-11	Samoa
GMT-10	Hawaii
GMT-9	Alaska
GMT-8	PST, Pacific US
GMT-7	MST, Mountain US
GMT-6	CST, Central US
GMT-5	EST, Eastern US
GMT-4	Atlantic, Canada
GMT-3	Brazilia, Buenos Aries
GMT-2	Mid-Atlantic
GMT-1	Cape Verdes
GMT	Greenwich Mean Time, Dublin
GMT+1	Berlin, Rome
GMT+2	Israel, Cairo
GMT+3	Moscow, Kuwait
GMT+4	Abu Dhabi, Muscat
GMT+5	Islamabad, Karachi
GMT+6	Almaty, Dhaka
GMT+7	Bangkok, Jakarta
GMT+8	Hong Kong, Beijing
GMT+9	Tokyo, Osaka
GMT+10	Sydney, Melbourne, Guam
GMT+11	Magadan, Soloman Is.
GMT+12	Fiji, Wellington, Auckland

2.3.10 Configure the Event Parameters

Click the **Event Config** button to open the **Event Configuration** page (Figure 2-24). The **Event Configuration** page specifies a remote server that can be used to receive HTTP POST events when actions take place on the board.

Figure 2-25. Event Configuration Page



Note Figure 2-25 shows the factory default settings.

Table 2-18 shows the web page items on the **Event Configuration** page.

Table 2-18. Event Configuration

Web Page Item	Description
Enable Event Generation	When selected, Event Generation is enabled.
Remote Event Server	
Remote Event Server IP	Type the Remote Event Server IP address. (64 character limit)
Remote Event Server Port	Type the Remote Event Server port number. (8 character limit)
Remote Event Server URL	Type the Remote Event Server URL. (127 character limit)
Events	
Enable Button Events	When selected, Button Events are enabled.
Enable Call Active Events	When selected, Call Active Events are enabled.
Enable Call Terminated Events	When selected, Call Terminated Events are enabled.
Enable Relay Activated Events	When selected, Relay Activated Events are enabled.
Enable Relay Deactivated Events	When selected, Relay Deactivated Events are enabled.
Enable Ring Events	When selected, Ring Events are enabled.
Enable Night Ring Events	When selected, there is a notification when the speaker receives a night ring.
Enable Multicast Start Events	When selected, Multicast Start Events are enabled.
Enable Multicast Stop Events	When selected, Multicast Stop Events are enabled.
Enable Power On Events	When selected, Power On Events are enabled.
Enable 60 Second Heartbeat Events	When selected, 60 Second Heartbeat Events are enabled.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Test Event	Click on the **Test Event** button to test an event.
Reboot	Click on the **Reboot** button to reboot the system.

2.3.10.1 Example Packets for Events

The server and port are used to point to the listening server and the 'Remote Event Server URL' is the destination URL (typically the script running on the remote server that's used to parse and process the POST events).

Note The XML is URL-encoded before transmission so the following examples are not completely accurate.

Here are example packets for every event:

```
POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 197
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>POWERON</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 199
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>HEARTBEAT</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 196
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>BUTTON</event>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 201
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>CALL_ACTIVE</event>
</cyberdata>
POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
```

```
User-Agent: CyberData/1.0.0
Content-Length: 205
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>CALL_TERMINATED</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 197
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>RINGING</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>MULTICAST_START</event>
<index>8</index>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 233
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>MULTICAST_STOP</event>
<index>8</index>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded
<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>RELAY_ACTIVATED</event>
</cyberdata>
POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
```

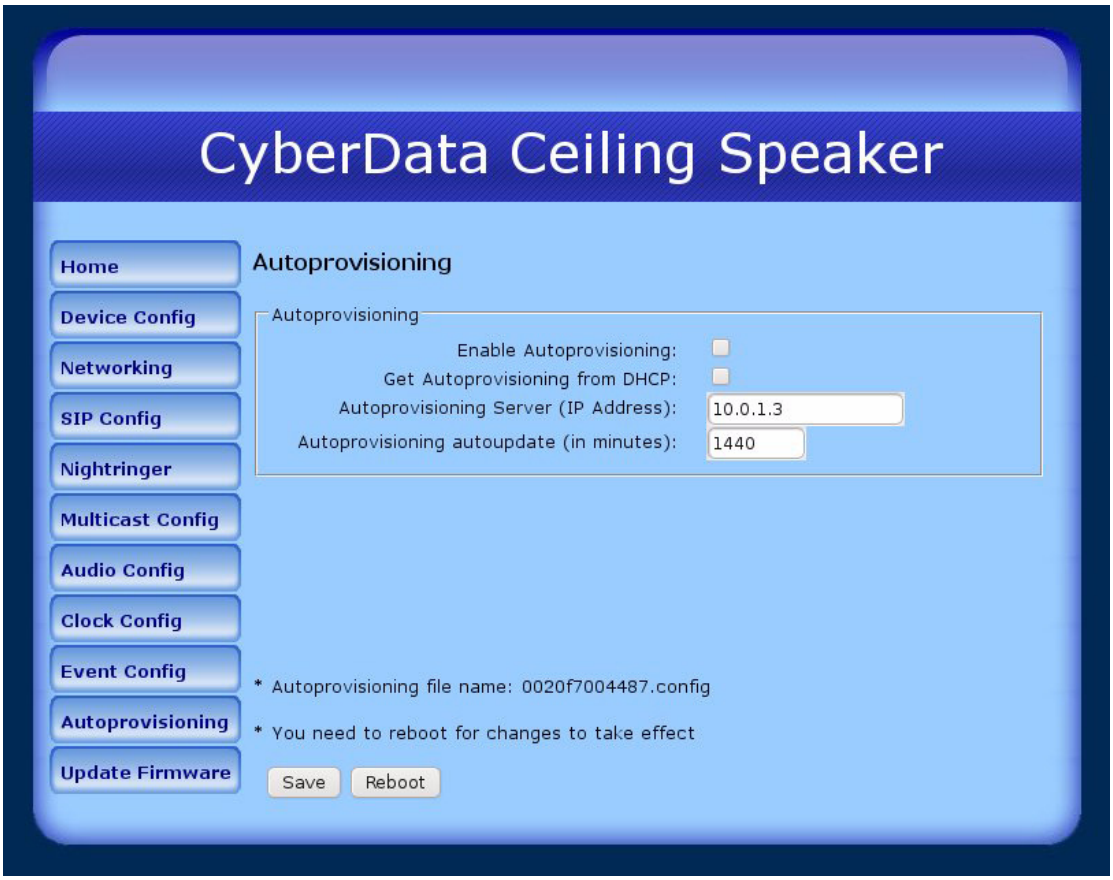
```
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded
<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>RELAY_DEACTIVATED</event>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded
<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>NIGHTRINGING</event>
</cyberdata>
```

2.3.11 Configure the Autoprovisioning Parameters

1. Click the **Autoprovisioning** button to open the **Autoprovisioning Configuration** page. See Figure 2-14.

Figure 2-26. Autoprovisioning Configuration Page



Note Figure 2-26 shows the factory default settings.

2. On the **Autoprovisioning Configuration** page, you may enter values for the parameters indicated in Table 2-6.

Table 2-19. Autoprovisioning Configuration Parameters

Web Page Item	Description
Autoprovisioning	
Enable Autoprovisioning	See Section 2.3.11.1, "Autoprovisioning".
Get Autoprovisioning from DHCP	See Section 2.3.11.1, "Autoprovisioning".
Autoprovisioning Server (IP Address)	See Section 2.3.11.1, "Autoprovisioning" (15 character limit).
Autoprovisioning Autoupdate (in minutes)	Type the desired time (in minutes) that you want the Autoprovisioning feature to update (6 character limit).
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click the **Save** button.

2.3.11.1 Autoprovisioning

Enable Autoprovisioning Option

With autoprovisioning enabled, the board will get its configuration from a remote TFTP server on startup or periodically on a scheduled delay. Autoprovisioned values will override values stored in on-board memory and will be visible on the web page. The board gets its autoprovisioning information from an XML-formatted file hosted from a TFTP server. CyberData will provide a template for this XML file and the user can modify it for their own use.

To use autoprovisioning, create a copy of the autoprovisioning template with the desired settings and name this file with the mac address of the device to configure (for example: **0020f7350058.config**). Put this file into your TFTP server directory and manually set the TFTP server address on the board.

It is not necessary to set every option found in the autoprovisioning template. As long as the XML is valid, the file can contain any subset. Options not autoprovisioned will default to the values stored in the on board memory. For example if you only wanted to modify the device name, the following would be a valid autoprovisioning file:

```
<?xml version="1.0" encoding="utf-8" ?>
<specific>
    <MiscSettings>
        <DeviceName>auto Ceiling Speaker</DeviceName>
    </MiscSettings>

</specific>
```

Networking

The board will only apply networking settings or firmware upgrades after a reboot.

Get Autoprovisioning from DHCP

When this option is checked, the device will automatically fetch its autoprovisioning server address from the DHCP server. The device will use the address specified in **OPTION 150** (TFTP-server-name) or **OPTION 66**. If both options are set, the device will use **OPTION 150**.

Refer to the documentation of your DHCP server for setting up **OPTION 150**.

To set up a Linux DHCPD server to serve autoprovisioning information (in this case using both option 66 and 150), here's an example dhcpd.conf:

```
# dhcpd.conf
#
# Configuration file for ISC dhcpd (see 'man dhcpd.conf')
#
ddns-update-style ad-hoc;

option option-150 code 150 = ip-address;

subnet 10.0.0.0 netmask 255.0.0.0 {
        max-lease-time 120;
        default-lease-time 120;

        option routers                  10.0.0.1;
        option subnet-mask              255.0.0.0;

        option domain-name              "voiplab";
        option domain-name-servers       10.0.0.1;

        option time-offset              -8;     # Pacific Standard Time

        option tftp-server-name         "10.0.0.254";

        option option-150               10.0.0.254;

        range 10.10.0.1 10.10.2.1;}
```

Autoprovisioning Server (IP Address)

Instead of using DHCP to provide the autoprovisioning tftp server address, you can specify an address manually.

Autoprovisioning Autoupdate

If **Autoprovisioning** is enabled and the **Autoprovisioning Autoupdate** value is something other than **0** minutes, a service is started on startup that will wait the configured number of minutes and then try to re-download its autoprovisioning file. It will compare its previously autoprovisioned file with this new file and if there are differences, it will reboot the board.

Autoprovisioned Firmware Upgrades

An Autoprovisioned firmware upgrade only happens after a reboot, will take roughly three minutes, and the web page will be unresponsive during this time.

The '**FirmwareVersion'** value in the xml file *must* match the version stored in the '**FirmwareFile**'.

```
<FirmwareVersion>v5.0.5b01</FirmwareVersion>
<FirmwareFile>505b01-uImage-ceilingspeak</FirmwareFile>
```

If these values are mismatched, the board can get stuck in a loop where it goes through the following sequence of actions:

1. The board downloads and writes a new firmware file.
2. After the next reboot, the board recognizes that the firmware version does not match.
3. The board downloads and writes the firmware file again.

CyberData has timed a firmware upgrade at 140 seconds. Therefore, if you suspect the board is stuck in a loop, either remove or comment out the **FirmwareVersion** line in the XML file and let the board boot as it normally does.

Autoprovisioned Audio Files

Audio files are stored in non-volatile memory and an autoprovisioned audio file will only have to be downloaded once for each device. Loading many audio files to the device from the web page could cause it to appear unresponsive. If this happens, wait until the transfer is complete and then refresh the page.

The device uses the file name to determine when to download a new audio file. This means that if you used autoprovisioning to upload a file and then changed the contents of this file at the TFTP server, the device will not recognize that the file has changed (because the file name is the same).

Since audio files are stored in non-volatile memory, if autoprovisioning is disabled after they have been loaded to the board, the audio file settings will not change. You can force a change to the audio files on the board by clicking **Restore Default** on the **Audio Configuration** page or by changing the autoprovisioning file with "**default**" set as the file name.

2.3.12 Upgrade the Firmware and Reboot the V2 Speaker

2.3.12.1 Upgrade the Firmware

To upload the V2 Speaker firmware from your PC:

1. Set up a TFTP server.

   If you do not already have a TFTP server running on your network, see Appendix B, "Setting up a TFTP Server".

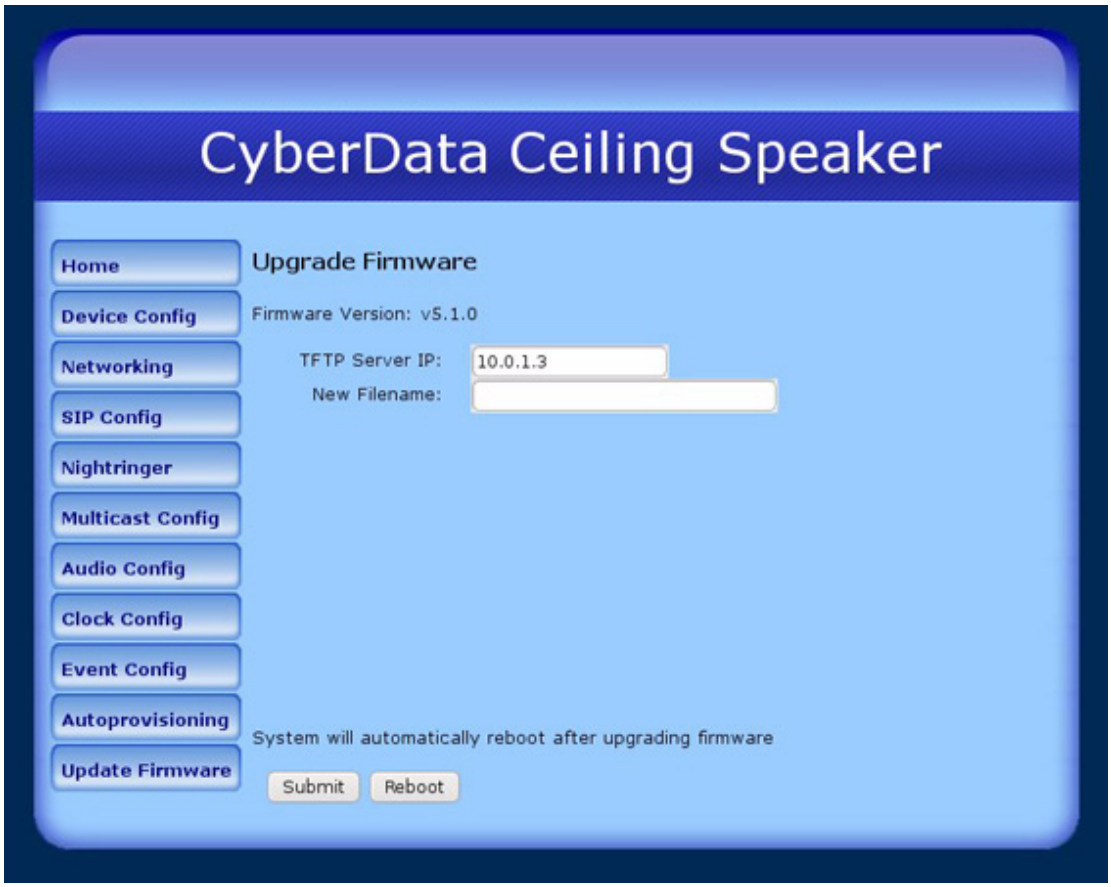
Note Retrieve the latest V2 Speaker firmware from the VoIP V2 Speaker **Downloads** page at:

http://www.cyberdata.net/products/voip/digitalanalog/ceilingspkr2/downloads.html

2. Unzip the V2 Speaker version file. This file may contain the following:
   - Firmware file
   - Release notes
3. Copy the firmware files to be upgraded to the appropriate TFTP server directory:
   - c:\tftp-root\for Windows
   - /tftpboot/for Linux
4. Log in to the V2 Speaker home page as instructed in Section 2.3.2, "Log in to the Configuration Home Page".

5. Click the **Update Firmware** button to open the **Upgrade Firmware** page. See Figure 2-27.

Figure 2-27. Firmware Upgrade Page



Note Figure 2-27 shows the factory default settings.

6. Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field.
7. Enter the firmware filename of the file to be uploaded into the **New Filename** parameter field.

   For example, kernel filename **201-image-spk-sip.bin**.
8. Click **Upload File**.

Note This starts the upload process. Once the V2 Speaker has uploaded the file, the **Uploading Firmware** countdown page appears, indicating that the firmware is being written to flash. The V2 Speaker will automatically reboot when the upload is complete. When the countdown finishes, the **Upgrade Firmware** page will refresh. The uploaded firmware filename should be displayed in the system configuration (indicating successful upload and reboot).

Note If you are upgrading an older version of the Speaker firmware to version 3.3.0 or later, several features will be in an unknown or random state. Therefore, in the case of a firmware upgrade to version 3.3.0 or later, CyberData recommends that you go to the **Device Config** page and make sure the following values are set properly.

- Auto Answer

Table 2-20 shows the web page items on the **Upgrade Firmware** page.

Table 2-20. Firmware Upgrade Parameters

Web Page Item	Description
Firmware Version	Shows the current firmware version.
TFTP Server IP address	Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field (15 character limit).
New Filename	Use this field to enter the new file name for the kernel or application firmware file that you are uploading (25 character limit).
	Click on the **Submit** button to automatically upload the selected firmware and reboot the system.
	Click on the **Reboot** button to reboot the system.

2.3.12.2 Reboot the V2 Speaker

To reboot a V2 Speaker, log in to the web page as instructed in Section 2.3.2, "Log in to the Configuration Home Page".

1. Click **Update Firmware** to open the **Upgrade Firmware** page (Figure 2-28).

Figure 2-28. Reboot System Section

2. Click **Reboot**. A normal restart will occur and you will see the following Reboot page.

Figure 2-29. Reboot Page

Appendix A: Mounting the Speaker

A.1 Mount the Speaker

Before you mount the speaker, make sure that you have received all the parts for each speaker. Refer to Table A-1 and Table A-2.

Table A-1. Drop Ceiling Mounting Components (Part of the Accessory Kit)

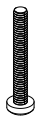
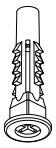
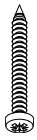
Quantity	Part Name	Illustration
3	#8 Nylon Thumb Nuts	
3	#8 Fender Washers	
3	8-32 x 1 1/4" Mounting Screws	

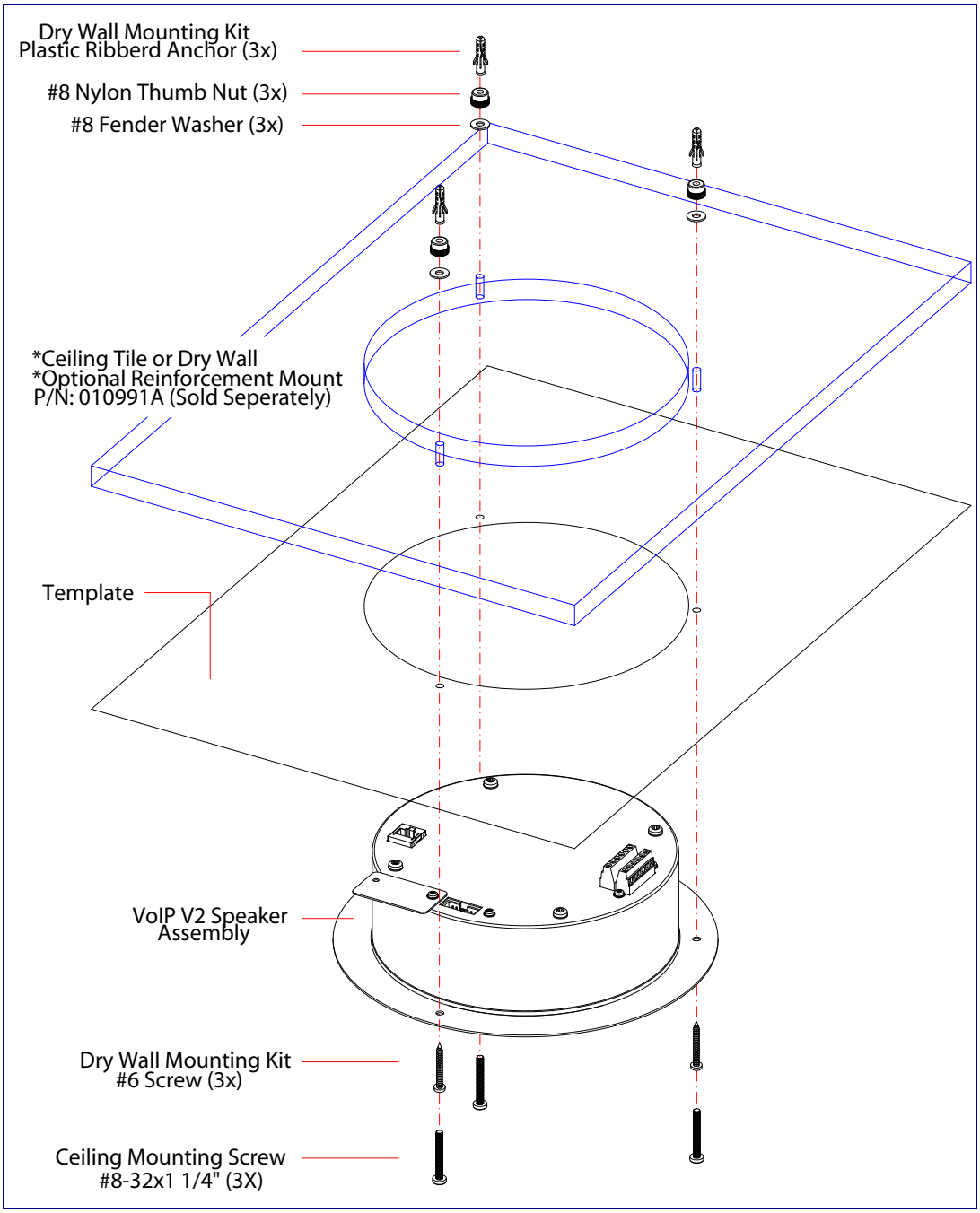
Table A-2. Drywall Mounting Components (Part of the Accessory Kit)

Quantity	Part Name	Illustration
3	Plastic Ribbed Anchors	
3	#8 Sheet Metal Screws	

To mount the speaker:

1. Use the **TEMPLATE** to cut the speaker hole and prepare holes for the screws (Figure A-1). This template is located on the back page of the *Installation Quick Reference Guide* that is delivered with each speaker.

Figure A-1. VoIP Speaker Assembly



2. Plug the Ethernet cable into the Speaker Assembly. Section 2.2.3, "Confirm that the Speaker is Operational and Linked to the Network" explains how the **Link** and **Status** LEDs work.

3. At this point:
   - For *drop ceiling mounting*, position the **VoIP SPEAKER ASSEMBLY** in the ceiling so that its screw holes align with those you prepared.
   - For *drywall mounting*, place the three **PLASTIC RIBBED ANCHORS** in the holes you prepared, and position the **VoIP SPEAKER ASSEMBLY** over them, aligning the screw holes in the assembly with the anchors.

4. To fasten the speaker:
   - For *drop ceiling mounting*, use the three **8-32 x 1 1/4" MOUNTING SCREWS**, **#8 NYLON THUMB NUTS**, and **#8 FENDER WASHERS** to secure the speaker.

Note For weak ceiling tile, CyberData offers a reinforcing mount (CyberData part number 010991A).

   - For *drywall mounting*, use the three **#8 SHEET METAL SCREWS** to secure the speaker.

Appendix B: Setting up a TFTP Server

B.1 Set up a TFTP Server

Upgrading the firmware requires a TFTP server on which you access the Web interface where you can upload the firmware files.

B.1.1 In a LINUX Environment

To set up a TFTP server on LINUX:

1. Create a directory dedicated to the TFTP server, and move the files to be uploaded to that directory.
2. Run the following command where `/tftpboot/` is the path to the directory you created in Step 1: the directory that contains the files to be uploaded. For example:

   `in.tftpd -l -s /tftpboot/`*`your_directory_name`*

B.1.2 In a Windows Environment

You can find several options online for setting up a Windows TFTP server. This example explains how to use the Solarwinds freeware TFTP server, which you can download at:

http://www.cyberdata.net/support/voip/solarwinds.html

To set up a TFTP server on Windows:

1. Install and start the software.
2. Select **File/Configure/Security** tab/**Transmit Only**.
3. Make a note of the default directory name, and then move the firmware files to be uploaded to that directory.

Appendix C: Troubleshooting/Technical Support

C.1 Frequently Asked Questions (FAQ)

To see a list of frequently asked questions for your product, go to the following URL:

http://www.cyberdata.net/products/voip/digitalanalog/ceilingspkr2/faqs.html

C.2 Documentation

The documentation for this product is released in an English language version only. You can download PDF copies of CyberData product documentation by going to the following URL:

http://www.cyberdata.net/products/voip/digitalanalog/ceilingspkr2/docs.html

C.3 Contact Information

Contact	CyberData Corporation 2555 Garden Road Monterey, CA 93940 USA www.CyberData.net Phone: 800-CYBERDATA (800-292-3732) Fax: 831-373-4193
Sales	Sales 831-373-2601 Extension 334
Technical Support	Phone: 831-373-2601 Extension 333 Web: **http://www.cyberdata.net/support/contactsupportvoip.html**
Returned Materials Authorization	To return the product, contact the CyberData Returned Materials Authorization (RMA) department at: Phone: 831-373-2601, Extension 136 Email: RMA@CyberData.net When returning a product to CyberData, an approved CyberData RMA number must be printed on the outside of the original shipping package. No product will be accepted for return without an approved RMA number. Send the product, in its original package, to the following address: CyberData Corporation 2555 Garden Road Monterey, CA 93940 Attention: RMA "your RMA number"

RMA Status Form

If you need to inquire about the repair status of your product(s), please use the CyberData RMA Status form at the following web address:

http://www.cyberdata.net/support/rmastatus.html

C.4 Warranty

CyberData warrants its product against defects in material or workmanship for a period of two years from the date of purchase. Should the product fail within the warranty period, CyberData will repair or replace the product free of charge. This warranty includes all parts and labor.

Should the product fail out-of-warranty, a flat rate repair charge of one half of the purchase price of the product will be assessed. Repairs that are in warranty but are damaged by improper modifications or abuse, will be charged at the out-of-warranty rate. Products shipped to CyberData, both in and out-of-warranty, are shipped at the expense of the customer. Shipping charges for repaired products shipped back to the customer by CyberData, will be paid by CyberData.

CyberData shall not under any circumstances be liable to any person for any special, incidental, indirect or consequential damages, including without limitation, damages resulting from use or malfunction of the products, loss of profits or revenues or costs of replacement goods, even if CyberData is informed in advance of the possibility of such damages.

C.4.1 Warranty & RMA Returns within the United States

If service is required, you must contact CyberData Technical Support prior to returning any products to CyberData. Our Technical Support staff will determine if your product should be returned to us for further inspection. If Technical Support determines that your product needs to be returned to CyberData, an RMA number will be issued to you at this point.

Your issued RMA number must be printed on the outside of the shipping box. No product will be accepted for return without an approved RMA number. The product in its original package should be sent to the following address:

CyberData Corporation

2555 Garden Rd.

Monterey, CA 93940

Attn: RMA "xxxxxx"

C.4.2 Warranty & RMA Returns Outside of the United States

If you purchased your equipment through an authorized international distributor or reseller, please contact them directly for product repairs.

C.4.3 Spare in the Air Policy

CyberData now offers a *Spare in the Air* no wait policy for warranty returns within the United States and Canada. More information about the *Spare in the Air* policy is available at the following web address:

http://www.cyberdata.net/support/warranty/spareintheair.html

C.4.4 Return and Restocking Policy

For our authorized distributors and resellers, please refer to your CyberData Service Agreement for information on our return guidelines and procedures.

For End Users, please contact the company that you purchased your equipment from for their return policy.

C.4.5 Warranty and RMA Returns Page

The most recent warranty and RMA information is available at the CyberData Warranty and RMA Returns Page at the following web address:

http://www.cyberdata.net/support/warranty/index.html

Index

Symbols

#8 fender washers 64, 66
#8 nylon thumb nuts 64, 66
#8 sheet metal screws 64, 66

Numerics

8-32 x 1 1/4" mounting screws 64, 66

A

address, configuration login 23
adjusting volume 18, 20
ambient operating temperature 5
analog speaker
  analog volume control needs to be disabled 14
announcing a speaker's IP address 18, 20
audio (buffered) 40
audio configuration 41
  night ring tone parameter 42
audio configuration page 41
audio output 5
audio sensitivity 5
audio test 18, 20
autoprovisioning 57
  autoprovisioned audio files 59
  autoprovisioned firmware upgrades 58
  autoprovisioning autoupdate 58
  autoprovisioning enabled option 57
  autoprovisioning from DHCP 57
  autoprovisioning server (IP address) 58
  networking 57
autoprovisioning configuration 55, 56
auxiliary remote call button (with V2 speaker) 12

B

buffered audio 40

C

changing
  the web access password 26
clock configuration 46, 47
clock configuration page 46
clock status 46
configurable parameters 25, 27, 29
configuration
  clock 46
  default IP settings 21
  device 8
  NTP Server 46
  SIP 31
  using Web interface 21
configuration home page 24
configuration page
  configurable parameters 27
confirming IP address 18, 20
contact information 68
contact information for CyberData 68
Current Network Settings 30
current network settings 30
CyberData contact information 68

D

default
  gateway 8, 21
  IP address 8, 21
  subnet mask 8, 21
  username and password 8, 21
  web login username and password 24
default gateway 8, 21, 30
default IP settings 21
default login address 23
device configuration 8, 26
  device configuration parameters 56
  the device configuration page 55
device configuration page 26
device configuration parameters 27
device configuration password
  changing for web configuration access 26
DHCP IP addressing 29
dial out extension strings 33
dimensions 5, 6
discovery utility program 23
DNS server 30
door sensor 42
drop ceiling mounting of speaker 66
drywall mounting of speaker 66
DTMF tones 33
DTMF tones (using rfc2833) 33

E

enable night ring events 46, 51
Ethernet cable 66
ethernet port baud rate 5
event configuration
    enable night ring events 51
expiration time for SIP server lease 32, 36

F

factory default settings
    figures showing the default settings 20
    how to set 20
features 3
firmware
    where to download the latest firmware 61
    where to get the latest firmware 60
firmware upgrade parameters 62
firmware upgrades 67

G

GMT table 49
GMT time 49

H

home page 24

I

identifier names (PST, EDT, IST, MUT) 49
identifying your product 2
illustration of speaker mounting process 64
installation, typical speaker system 3
IP address 8, 21, 29, 30, 62
IP addressing 29
    default
        IP addressing setting 8, 21

L

lease, SIP server expiration time 32, 36
lengthy pages 39
link LED 66
Linux, setting up a TFTP server on 67
local SIP port 32
log in address 23

M

MGROUP
    MGROUP Name 39
mounting a speaker 64
multicast configuration 37
Multicast IP Address 39

N

navigation (web page) 22
navigation table 22
network link activity, verifying 17
nightring tones 39
nightringer settings 36
NTP server 47
NTP Server configuration 46

O

overview 1

P

pages (lengthy) 39
parts
    #8 fender washers 64
    #8 nylon thumb nuts 64
    #8 sheet metal screws 64
    8-32 x 1 1/4" mounting screws 64
    plastic ribbed anchors 64
password
    for SIP server login 32
    login 24
    restoring the default 8, 21
plastic ribbed anchors 64, 66
point-to-point configuration 34
port
    local SIP 32
    remote SIP 32
power input (J1) 5
power requirement 5
power, connecting to speaker 9
priority
    assigning 39

product
configuring 21
mounting 64
parts list 7
product features 3
product overview 1
product features 3
product specifications 5
product specifications 5

R

reboot 62, 63
remote call button 12
remote SIP port 32
Reset Test Function Management (RTFM) switch 18, 20
restoring the factory default settings 20
return and restocking policy 70
ringtones 39
lengthy pages 39
RMA returned materials authorization 68
RMA status 69
RTFM switch 18, 20

S

sales 68
server address, SIP 32
service 68
setting up a TFTP server 67
SIP
enable SIP operation 32
local SIP port 32
user ID 32
SIP configuration 31
SIP Server 32
SIP configuration parameters 32
outbound proxy 32
registration and expiration, SIP server lease 32, 36
unregister on reboot 32
user ID, SIP 32
SIP registration 32
SIP remote SIP port 32
SIP server 32
password for login 32
unregister from 32
user ID for login 32
SIP settings 32
Spare in the Air Policy 70
speaker configuration
default IP settings 21
speaker configuration page
configurable parameters 25, 29
speaker operations, verifying 26
static IP addressing 29
status LED 66
Stored Network Settings 29
subnet mask 8, 21, 29, 30

T

tech support 68
technical support, contact information 68
template for speaker and screw holes 65
testing audio 18, 20
TFTP server 67
time zone string examples 48
time zone strings 48
typical system installation 3

U

user ID
for SIP server login 32
username
changing for web configuration access 26
default for web configuration access 24
restoring the default 8, 21

V

verifying
network link and activity 17
power on to speaker 17
speaker operations 26
VoIP speaker assembly 66
volume, adjusting 18, 20

W

warranty 69
warranty & RMA returns outside of the United States 69
warranty & RMA returns within the United States 69
warranty and RMA returns page 70
warranty policy at CyberData 69
web access password 8, 21
web access username 8, 21
web configuration log in address 23
web page
navigation 22
web page navigation 22

web-based speaker configuration 21
weight 5
Windows, setting up a TFTP server on 67